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approach

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The Fourteenth Day

By Lcdr. D.B. Fennessey

AND on the eighth day, or some considerable time later, after man had subdued the earth, he plied the seven seas in mighty vessels hundreds of cubits long. Gopher wood had long since been replaced by steel, and sails were replaced by great furnaces

which spewed forth fire and smoke from their mouths. And man wandered to the ends of the earth, for his heart was like a lion's.

And on the ninth day, man slipped the surly bonds. As an eagle, he soared above the tents and flocks of his less fortunate brethren. And his

craft contained therein hundreds of tins of burnable elixir which belched much smoke and vile noise. And man split the clouds, and his heart was like a lion's.

On the 10th day, a great cry went out from the elders: "Who among you has courage enough to fly winged chariots from a boat tossed by the angry sea? Who will leave his helpmate upon the land for seven times seven times seven days every year? Who will brave the dark, the storms, the Pork Adobo for only 10 genrahs per month?" And a hush fell upon the people, for none of them would come forth. But from the asylums and brothels and houses of the wine sellers came forth the few. And their eyes were as an eagle's, and their hands were steady and their

hearts as lions'. Yet their thirst was considerable, their spirits untamed and their morals subject to considerable concern. And the elders, seeing none more worthy come forth, sighed greatly and called them naval aviators and their wings were of purest gold, and they went forth to smite the enemy.

On the 11th day, the elders bemoaned their plight. The naval aviator was not an angel and was not always borne up from his perils. His chariots were too often consumed by fire or the furnaces went out and multitudes perished. And the taxpayers were wroth, for it costs them many talents of silver. And the elders tore their garments and wailed,

"What shall become of us? Surely we are doomed."

On the 12th day, wisdom came into the gray heads of the elders. As of one voice they cried, "Safety in all things. We shall do away with folly, build our chariots cleverly and teach the chariot maintainers well. They shall number their tools of repair and shall not work in perilous places without armor. Neither shall they venture near the mouths of the fiery furnaces for they may be consumed. They shall follow the books of wisdom because man's remembrance is imperfect. Nor shall any naval aviator drink of wine but be well-rested and girded before flight. His heart should still be as a lion's, but

he should have the wisdom of an owl. And the word was safety and the word went out and the word worked miracles.

On the 13th day, the elders marveled. Naval aviators lived to the age of fruition and multiplied (a mixed blessing). The chariot

maintainers delighted in keeping their eyes, ears and loins without blemish. The plague of falling chariots had subsided, and many talents of silver remained in the coffers to pay for the elders' retirement.

On the 14th day, the earth shall resound with rejoicing, for *all* naval aviators shall return from the skies alive. And they shall greet their maintainers with hearty praise for their manifold good works. And the elders shall congratulate each one to the other saying, "Safety is truly in men's hearts."

Amen.

How hard are you working toward the 14th day?

Lcdr. Fennessey is an A-7E pilot with VA-146. He has also served as an exchange pilot with Britain's RAF, flying Harriers.

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inside approach

Vol. 30 No. 8

TA-4Js of VT-21 conduct carrier qualifications aboard the USS *John F. Kennedy* (CV 67). (Photo by Peter Mersky)

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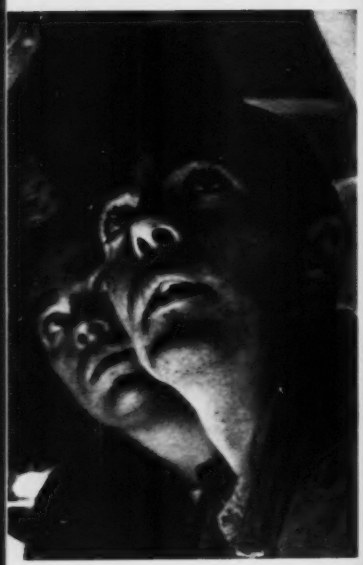
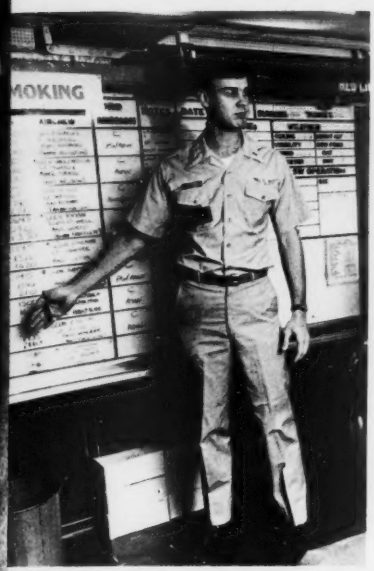


Does your squadron have a mobilization plan?

Mobilization: ARE YOU READY?



When the sirens go off, it will come down to one irrefutable fact: we will man up and launch.

By Lt. Col. Marshall Lefavor, USMCR

WHEN was the last time your squadron discussed all-out mobilization in an AOM? In the routine crush of everyday operating commitments, the subject could be lost in the shuffle. The key is planning for the contingencies to avert to the largest extent possible the logistic and safety problems that will no doubt arise.

The first step is to confirm where the squadron is going. Dust off the applicable OpPlan that details where you go in a mobilization and review the squadron SOP for getting there.

Both Navy and Marine squadrons share a common denominator: deployments. They go with the territory. Although deployments share many characteristics of a mobilization, it would be dangerous to consider the squadron's record of smooth deployments to be an automatic indicator of a successful mobilization. Deployments tend to become routine; mobilizations are hardly routine.

Deployments become acutely important when considered along with the possibility of a mobilization. Look at the contingencies.

If the entire squadron is aboard the big ugly on station in the IO and it happens in the Middle East, no factor. What happens when you've been rotated back to home plate? What happens if only a detachment is deployed? Do they come home first, or join up at an en route base? Knowing that you need to move to points A, B and C and all the attendant considerations is a complex undertaking. Adding a few twists to a routine deployment is an excellent way to confront a few of the bears that await in a mobilization. Instead of a routine cross-country, perhaps the Ops-O could

Rare indeed is the squadron that won't be affected by mobilization.

arrange for a plug along the way. Or it could be the chance to borrow a pathfinder for some unusual navigation.

If mobilization is a definite factor in your squadron, the concept provides a wealth of questions for the safety officer to ponder:

— SOP. Does the squadron have an animal called the mobilization SOP? If not, it would be wise to check up your chain of command and devise one from the OpPlan. If so, a cross-check is in order to ensure that it's in concert with the latest OpPlan so that everybody's singing out of the same hymnal.

— Aerial refueling. This is a great time to scan the qual board with an eye to where you're going. If you belong to the types that have a probe, now is the time to consider how many squadron pilots are ready to go. Must-plug situations over open ocean are a prelude to disaster.

— Weather. This is an area that affects all communities. Does the squadron have a climatology study for en route support and staging bases? A low-fuel approach to Lajes Field in a gale force crosswind to their only usable runway is no time to consider a seasonal weather study of the Azores. Complete breakdowns of area weather patterns are easily obtainable and should be a part of the SOP. This is also another motivator to check the qual board for IFR tickets.

— Intelligence. Not my job, right? I just fly the plane where I'm told and let someone else worry about the bad guys. Perhaps. On the other hand, take a look at the areas you'll be staging in and get the picture. What is the general geo-political threat in that area? How high are the chances of sabotage? How reliable are the indigent forces that might have to guard your aircraft? In the event of actual mobilization, a lot of folks are going to be trying to use the same patch. You might be several days en route. Those multi-million dollar supersophisticated beauties are your responsibility every step of the way.

— NATOPS. There have been several fine articles written on safety in combat. They open excellent discussions on the philosophy of overlooking certain NATOPS constraints when real BBs are in the air. In a November-Sierra mobilization, you have arrived at that point. Now you are in the realm of when minimums are really minimums and what other shortcuts are reasonably prudent when your mission is to get your war birds into the fray. The underlying theme of these articles is that if you crash your airplane and kill yourself by ignoring safety, you have aided the enemy. These are definite items for your mobilization SOP.

— Administration. When the sirens go off, it will come down to one irrefutable fact: we will man up and launch. A workable mobilization SOP should place demands on the administrative officer to ensure that all hands have their administrative affairs in order. When the wheels are in the well, it's too late to worry about wills, health records, power of attorney or the lease. If these areas are suitcased before the fact, everybody can concentrate on his job.

— Off-the-wall department. This is an area wide open for squadron input. A safety officer can pick the brains of the experienced crews and find many gems of knowledge to round out a workable SOP. He could challenge all hands to come up with mobilization "what-ifs" to cover a wide range of contingencies. You might get questions like, "Since we fly the latest Darth Vader model XX-1, will the en route bases have tie-down chains to fit, or do we bring our own?"

Frivolous? You decide. Your skipper might be surprised at the bag of legitimate questions that illuminate serious problems.

The final consideration is to make a definite commitment to a plan. Rare indeed is the squadron that won't be affected in some way by an all-out mobilization. It could range anywhere from folding the blades and towing the birds to the waiting C-5, or it could easily entail a full-scale fly-it-yourself movement across half a globe.

Our mission in naval aviation is to bring our weapons to bear on the enemy or support the guy who does. The more we can assist the planners in getting there with the maximum assets intact, ready to do the job, the better we can perform that duty.

Lt. Col. Lefavor is the operations officer for the Second Marine Aircraft Wing Mobilization Training Unit MC-5.

ANYMOUSE

Walking Fire Hazard

A line petty officer walked into the office reeking of JP-5 fuel fumes. When he was asked, he replied that in taking fuel samples from an aircraft, he wiped the bottle cap on his jacket to clear ice and impurities while the cap had fuel on it. Fuel stains were clearly visible on the man's clothing. It certainly was lucky that nobody nearby was smoking.

This type of thing might be prevented by the lineman carrying rags to be used for wiping, but I feel that the FOD hazard would not be worth such a move. Greater awareness to the possible hazards of wiping fuel on their clothing should be brought to the attention of line personnel. They should be warned not to do it under any circumstances.

Fuelsafemouse

According to ABCS Van A. Brust, Air Operations Analyst, Naval Safety Center, it is better to provide rags to the line crew for such tasks than to allow personal clothing to become soaked with fuel. Fuel-soaked clothing is not only a fire hazard but can cause skin irritation. Providing a rag and a suitable container for its disposal after use (to avoid FOD hazard) is nothing new (we use rags to clean canopies, wipe up hydraulic fluid, etc.), Chief Brust added.

Give me a light! A VLA (visual landing aid) light!

Dear Anymouse:

Like the man said, "Give me a light!" And much to everyone's knowledge, the VLA system was mechanically and electrically functioning as per perfectly . . . except the pilot lost visual contact with the low cell when he needed it most!

You see, good buddies, the problem of projecting a clear beam of light to an aircraft trying to find that arresting wire is always going to be directly proportional to the obstructive addendums which are affixed between the surface of the illuminated lenses and the pilot's eyes — and that, my friends, is where the ball game can be lost (as they say) in the twinkling of an eye.

How many times have you taken notice of the fine crop of grass and weeds that grow with gusto in front of the land-based FLOLS*? And what of the dusty dirt which has an affinity to mass together on the lenticulars (as well as the inside compartment area, too) to create the "fuzzball" of confusion? Also, let us never forget the grime which always is taking up residency on the shipboard FLOLS. This can work mysterious illusions to take place to those who depend on a "light."

And another point to remember: A VLA system is not a good place to drape your jackets, shirts, washrags or whatevers — land o'goshen, shucks and golly! Five will get you 10 that your laundry will be forgotten as it flies in the breeze, as it plays hell with the very best of eyeballs from 2,500 feet off the approach end of the numbers.

So, beware of these oversights and assure that your VLA system is giving the visual performance for which it was designed. Aside from the tremendous technical services required to the VLA systems — let's take care of the surrounding site, too.

NAEC/QAOmouse

*Fresnel Lens Optical Landing System

Ear Safety

We're taught that as long as an aircraft is "turning" on the flight deck, you must have your "ears" on. Since I've been aboard, I've yet to see everyone conforming to this "requirement."

I told several guys to get them on when a helo was turning, but apparently, they don't consider this an aircraft. But when a helo turns up, it causes the same problem as the "go fasters."

The only solution is not to allow people on the flight deck without ears on.

Allearsmouse

Let Anymouse Know. We encourage you to write Anymouse whenever you see "a mishap about to happen." If you know of a hair-raising situation in the air or on the deck, let Anymouse know about it. You may help someone else avoid an unsafe incident.

Anymouse is a unique department in Approach where no names are used. All information is anonymous. In fact, Anymouse was born three decades ago when someone couldn't spell "anonymous" and signed his letter "anymouse." Thus, a mouse wearing flight gear has become a world-wide naval aviation safety symbol.

Over the years we have found it is often more prudent and speedy to report unsafe situations anonymously. Keep in mind, though, that Anymouse is not interested in personality conflicts or non-constructive criticism of individuals. All views expressed are those of the writers and do not imply endorsement by the Naval Safety Center.

For your convenience, postpaid Anymouse mailing forms are available in most readyrooms and from most flight safety officers. Use of the form is not mandatory, though. Just jot down your thoughts and mail to Anymouse, Approach Magazine, Naval Safety Center, NAS Norfolk, VA 23511-5796.

A Death in the Squadron

By Lt. Gordon Aaseng

"BASE, 107."

"Go ahead."

"Ah . . . my wingman's just crashed. I didn't see an ejection; I don't think they made it, but I'm going to take a look."

Oh, ____. Who was it? What do I do? Call SAR. Draft an OPREP-3. Where's the damn pre-mishap folder? A thousand thoughts race through the duty officer's head. His palms are sweating, and he feels a sort of numbness come over his body. *Why'd it have to happen on my watch?*

He finds the pre-mishap plan folder and has it open in the middle of the desk. *OK, gotta call the skipper; jeez, how do I tell him the one thing he doesn't want to hear?*

"Base, 107, SAR's on the way, but I didn't see anything down there but an oil slick and some debris."

"Roger, 107. Let me know."

The word spreads quickly through the squadron. Overheard radio transmissions and bits of conversation make their way from office to office, shop to shop. "What happened?" "Who was it?" buzz

throughout the hangar; the dismal news takes precedence over the day's routine, and work grinds to a standstill.

All the heavies, the mishap board members and a group of lurkers just wanting to know have gathered in the readyroom. The SAR helo is on scene and confirms what everyone hoped would not be: There were no survivors.

The initial mayhem begins to subside as the truth sinks in. The various grim tasks are assigned. The safety officer will write the initial mishap report; the operations officer gathers up the training jackets and log books and begins pouring over them; the XO, as senior member of the board, will interview the flight lead when he gets back and organize the investigation. The skipper gets the worst job: telling the survivors of the NFO and of the pilot what they've always, in the back of their minds, dreaded.

In the shops and offices, the routine gradually resumes; there's still work to be done. But the thoughts and what little conversation there is all center on the accident.

"I launched that plane this morning," a plane captain tells the small group standing around in the line shack. "They were both in a good mood, seemed to be feeling good about going flying. The pilot congratulated me on making third class, and the nav joked something about letting anybody be a petty officer nowadays." But privately, he wondered, *Did I miss anything? Was there a loose bolt or a missing safety wire, or something that I should have caught on the turn-around? I remember thinking during the launch about maybe finally getting off the line and into the shop now that I've made rate and how tired I am of doing the same old thing every day; I really can't remember checking every last detail . . . Aw, I must have, though. I've done it the same way two, three times every day for a year. Could probably launch a plane in my sleep.* Still the thought lingers. *Was it my fault?*

In the seat shop, two AMEs talk quietly in the corner of the room. "Didn't we put the seats back in that plane last month?" "Yeah, and maintenance was really on us to get it done; said it had to fly a test hop and get out on det in two days." Unspoken, but penetrating their minds against their resistance to the idea: *Was every detail perfect? Maybe they tried to punch out but couldn't . . .*

Power plants had changed the fuel control a few days ago. *Was it done right?* In airframes: *How thoroughly did I inspect that boost pack change?* A pilot wondered, *Could that little 'pop' I heard last night that scared me for a second, but then, when it didn't happen again, I wrote off as a night noise, have had anything to do with it? Jeez, I wish I'd downed the plane.*

The flight lead has remained on scene down to bingo fuel and starts the somber flight home. Ever since the accident happened, he'd been kept too busy to think about anything besides the SAR operation. Now, on the way back to base, images flood his mind. He had turned to glance back at his wingman and saw nothing where a plane had been just a minute ago. *What the heck?* he thought. Then a wing dip let him see the aircraft already far below, nose down, rolling to the right. He keyed the radio; "Hey, level your wings! Get your nose up!" No

response. "What's the problem?" Still silence. The nose had dropped to nearly straight down now, still rolling, the plane getting much too small. "Get outa there! Punch out! Eject!" Nothing. Suddenly, the plane disappeared, replaced by a shocking, sickening white circle growing on the surface of the water.

It took all his concentration to keep his mind on flying the plane and not on that circle of white foam.

Gradually, his mind drifts back to the brief. The pilot was a nugget, only a couple months in the squadron. Just as the SDO was getting ready to call his house, he had come rushing in to the readyroom. "Sorry I'm late," he said, out of breath, "guess I overslept."

His usual quick smile seemed somehow forced this morning. Later, getting into his flight gear, the lead had caught bits of a low-voiced conversation between the pilot and NFO. "God, I'm tired. My fiancee called . . . don't know what she . . . said she's not sure about . . ."

The radio crackles to life in his helmet.

"107, approach, turn left to 230, descend and maintain 4,000."

"Roger, out of 11 for 4." The call brings him momentarily back to reality. *Why hadn't I talked to the kid? I could have canked the hop — maybe I should have.*

It was only a warm-up for him after a week and a half of leave. It was so obvious that his mind wasn't on flying; why didn't I read the signals?

The mishap board meets, talks, questions and ponders for the better part of two weeks, day and night. The board could only guess what had happened. It could have been any of several possibilities, but the plane was under 300 fathoms of water and the aircrew were both dead. Nobody ever knew for sure what had gone wrong that day.

No one was blamed. Yet, those questions remained: *Was it my fault? Could I have prevented it?*

The questions never quite go away.

Lt. Aaseng is an A-4 pilot and the aviation safety officer in VAQ-33. He has previously been a TA-4 instructor in the training command.

Night Illusions

By Lt. Arturo C. Cuellar

AFTER a hectic night FCLP* sortie at an outlying field, I proceeded home VFR. Due to the clear visibility this particular night, I was able to see other aircraft lights as far as 20 miles away. This increased my awareness of the heavy night traffic so prevalent in the area.

Once under their control, approach gave me radar monitors to the VFR initial entry point and a descent to 4,000 feet. I've always been somewhat leery about VFR initials; they are common points in space at which all VFR traffic converges. As I approached the initial from the west I spotted oncoming traffic from the east descending to the same point. Aircraft entering initials often come in belly-up and blind to opposite inbound traffic and this was developing into that exact situation.

Approach control did not mention any traffic, and I was concerned that neither I, nor the other aircraft had been informed of each other. I was in a port 30-degree angle of bank turn toward the initial when the traffic, moving ever closer, turned starboard toward me. Not yet being in an *extremis* situation, but willing to avoid any confrontation, I immediately rolled starboard to approximately 45 degrees angle of bank and pulled about 3 Gs. Much to my surprise the other aircraft matched my turn and both aircraft continued into what was now a rapidly deteriorating situation. A constant bearing, decreasing range was well established now, and a definite avoidance maneuver was needed. I immediately initiated a snap port roll to about 100 degrees angle of bank to put my nose down and away from the oncoming aircraft. Again, he duplicated the maneuver and was now converging down on top of me. I was out of tricks, and quickly running out of altitude. As the aircraft closed within a few hundred feet, I was quickly convinced it wasn't my day, but certainly my last.

Death appeared imminent and my heart seemed to stop. The lights appeared to be so close that I braced for impact! The aircraft lights continued to separate in such a manner that fortunately I realized the potential killer was actually two aircraft separating from formation at quite a distance from me. The effect of such a night illusion was convincing and deadly. It was extremely difficult to analyze through situational awareness when the trick was performed in only seconds. I was fooled, but as close as I came to death that time, it was only seconds later when I came even closer.

I had previously committed myself not to eject over a city but my aircraft was now headed directly for one at military power, approximately 20 degrees nose down, and the radar altimeter screaming its warning tone at me while passing through 1,500 feet AGL. I immediately reduced the throttle, deployed full boards, and loaded up 7 Gs. I pulled out at less than 200 feet AGL. I visualized imaginary headlines, "Pilot Dies in Crash, Reason Unknown." The phantom killer dealt his illusion and I almost fell for it.

The aircraft were being given radar separation two miles from where I perceived the "killer" jet. Since then, I have talked to several pilots and read accounts of similar incidents. Pilots may have punched out because of this optical phenomenon. Who knows how many guys didn't have the chance? What about the real headlines, "Pilot Dies in Crash, Reason Unknown."

Lt. Cuellar is an A-7E pilot with VA-147 and is the Aircraft Division Officer for the squadron.

*Field Carrier Landing Practice

Just Another Night Bombing Hop

By Lcdr. R.E. Noziglia, Jr.
Lcdr. Noziglia is safety officer for VA-97.

MAN, it's cold. A 26-degree night preflight in northern Nevada, then airborne for some "darkness" bombing. The sky is clear, with lots of stars and a large full moon. This should be fun and great training for all the guys in the flight, a bunch of brand-new aviators just out of the training command.

Engine start, acceleration checks and climb to altitude are all normal; this should be a good one. I flew this jet this afternoon and I know where it's hitting. My CEP[1] is on the way down.

On target, nose at the ground — bombs away — six runs — smooth as glass. Fifteen feet CEP and working it down.

Approaching the roll-in on the seventh run, I moved the power lever to military, and there was a noticeable deceleration in the engine. I said, "Something is not right and I'm heading this baby to the nearest field."

As I put home plate on the nose, I noticed the master caution light flashing and the engine oil light on. It's procedures time. I set the power at 75 percent to 85 percent RPM, but before I can focus on the gauge, the lights go out.

Well the next step is the EPP[2], so here we go. Oh boy, the lights are back on. Let's see what we have: Fuel Flow = 0, RPM = 0, Oil Pressure = 0, Turbin Outlet Temp = 0. It's not supposed to work this way.

In my best Steve Canyon voice:

"Target control, Eagle One, I've lost it and I'm heading back."

"Eagle One, say again."

"Target Control, I've got Zero Fuel Flow and Zero RPM. I'm heading for home and trying to get a relight."

"Roger One, check Manual Fuel."

"Roger I'm in Manual, 260 knots at 12,000 feet MSL."

"Roger, are indications still zero?"

"That's affirmative."

"Eagle One, eject, launch the SAR Helo, alert homeplate that Eagle One is ejecting."

[1]Circular Error Probability — the middle score in a series of ordnance delivery runs, the lower the better

[2]Emergency Power Package — a ram air-driven electrical generator

I thought to myself, this is not your routine night bombing hop. I must check everything to make sure it's right:

Throttle at idle
EPP out, in "cruise"
Manual fuel
Air ignite

I've got 4,500 pounds in the main fuel cell. This machinery should be making noise and developing thrust.

I'm not going to *glide* this SLUF into the base and there are too many lights down in the valley off my nose. I'll point this glider south towards the salt flats and hope it starts working in the turn. There are no lights in front of me now. How about some thrust? No, still no engine.

I can tell that I am clear of the mountains, thanks to Mister Moon. My straps are tight, and I have taken off my knee board. It looks black ahead and I'm about 3,000 to 4,000 feet above the dirt. I'll decel to 200 knots and get out of here.

It is dark under the face curtain. I see a flash above me and up I go.

It is *abrupt*. Let's see, what have I got? My helmet is missing. I have a sting on the left side of the face and my right shoulder doesn't work too well.

The 'chute looks good but I wish it was larger, like the size of Oregon. Wow, brilliant sparks appear where my glider hit. I pause, as my naval career passes before my eyes.

I am going to hit the ground at a fairly high elevation, so I had better get set. I should roll left because of my shoulder. How close to the ground am I? Holy ———, that smarts. I get up and walk around to see if everything works like it should. My shoulder is badly damaged and I quickly realize that it is cold at night in the mountains this time of the year.

How about equipment? My night flare will alert the spotter aircraft, but with my right arm at considerably less than 100 percent, maybe I should just torch off my moustache. Man, it's getting colder, but I can hear the helo. I signal with my flashlight for a pickup. This was certainly not just another night bombing hop. ◄

Adequacy and the MIR

By Maj James R. Forney, USMC

WHEN the senior member of an Aircraft Mishap Board (AMB) presents his Mishap Investigation Report (MIR) to the appointing authority, normally a squadron commander, an important step in the effort to eliminate hazards has begun. OPNAVINST 3750.6N states:

> "Appointing authorities of AMBs shall review MIRs for adequacy (as opposed to review for concurrence/non-concurrence) prior to the release of the MIR message and mailing of enclosures (if any). Should the appointing authority consider that either the investigation and/or report are not adequate, the report shall be returned to the AMB and measures taken to ensure the adequate investigation and/or reporting of the mishap."

The appointing authority has a significant problem. How can he decide if the investigation is truly adequate? What is adequate and what is not? Where can he turn for advice? His safety officer was most likely the person who wrote the report and would not have submitted it if he felt it was inadequate. The submission deadline is most likely at hand. The CO must also begin to write his endorsement of the report. These combined factors create an environment in which an inadequate MIR may be submitted. In order to provide the CO some help, a short review of OPNAVINST 3750.6N is in order. It is focused on two areas which must be considered in order to ensure adequacy. They are the format of the report and the logical flow of data from evidence to recommendations.

A single format is prescribed for all MIRs, regardless of the severity of the mishap. This is not only for administrative convenience and for ease of use through familiarity over time, but also because the kinds of required information usually do not vary with severity. Some say, "If the report contains the required information, then why worry about the format?" The reason is very simple; credibility.

Credibility is a vital aspect of submitting an MIR in the correct format. Reviewers of the MIR will base their opinions on how the facts are presented as well as the facts themselves. In public speaking, if a speaker stumbles through a presentation, he may in fact deliver the correct information, but the audience will focus on the delivery and not on what was said. The same holds true in the presentation of data resulting from a mishap investigation. The fact that the author of the MIR uses the prescribed format lends credence to his skills as a professional who endeavors to achieve the one and only objective of the naval aviation safety program: the elimination of hazards.

The format is found in Chapter 7 of OPNAVINST 3750.6N. Paragraph 716 covers the format and gives helpful advice as to what should or should not go into various sections of the report. The double underlined portions of the report format must be repeated verbatim in the report text.

The second area of concern is the logical flow of data from the collection of evidence to recommendations that will

hopefully eliminate the mishap's cause factors. In order to determine if this area of the MIR is adequate, the appointing authority must understand the purpose of the final four paragraphs in the report. Each paragraph is of an individual nature designed to provide a method by which our common goal of hazard elimination can be achieved.

Paragraph 10 is titled "Evidence." This paragraph should contain, and be limited to, evidence found by the AMB during the mishap investigation. Paragraph 10a is a list of all enclosures to the MIR. Paragraph 10b is a summary of all the significant evidence concerning the mishap. A chronological sequence of events will enhance clarity and assist in the organization of this paragraph. All items of evidence used in forming opinions in the following paragraphs shall be presented here. This is the backbone of the MIR, since conclusions and recommendations can't be made without sufficient evidence. This paragraph must contain what happened, what was seen, what was heard, what was said and all other pertinent facts brought to light. Only when these facts are assembled can the AMB begin to analyze them.

Paragraph 11 is titled "Analysis." This paragraph contains the board's analysis of the facts contained in paragraph 10 and should describe the reasoning of the board. Additional facts are not to be included in this section. A listing of possible cause factors should include only those which were considered by the board to be reasonably possible. The board must determine which of the possible cause factors are supported by evidence and which must be rejected for lack of supporting evidence. The board must state the basis for rejection of certain possible cause factors and also state the basis for support of accepted possible cause factors. The details of this deductive reasoning process should all be described in order that the validity of the conclusions which follow in the next paragraph may be fairly judged by reviewers of the MIR.

Paragraph 12 is titled "Conclusions." The conclusions of the AMB report shall be based solely on facts presented in paragraph 10 and the analysis of those facts done in paragraph 11. These conclusions are a listing of the possible cause factors that were accepted by the AMB to be cause factors of the mishap, as well as the possible cause factors that the board accepted as cause factors of injury and/or damage. The term "cause factor" is synonymous with "hazard." An important note for all of us who remember when there were such things as "direct," "contributing," "primary" and "principle" cause factors is that those terms are no longer used in the evaluation of cause factors. The proper evaluation of cause factors is called "risk assessment."

Risk assessment codes are found in Appendix B of OPNAVINST 3750.6N. Once all cause factors are listed, along with the appropriate risk assessment codes, the board shall make recommendations to eliminate each cause factor in order to preclude a similar mishap occurrence.

Paragraph 13 is titled "Recommendations." This is where we strive to achieve the objective of our safety program. Recommendations that do not serve to eliminate mishap cause factors identified in paragraph 12 are *not* to be included in this paragraph. Recommendations under consideration may be evaluated by using the following test: "If the recommended action had been taken prior to the mishap, would the hazards which caused the mishap have been eliminated, and the mishap prevented?" The guidelines in Appendix C of the instruction should be used by the AMB in formulating the recommendations. A common error made by AMBs is to fail to make recommendations for each and every identified cause factor. The AMB may also incorrectly suggest recommendations that do not address any specific cause factor identified in paragraph 12. Last, *"motherhood" statements do not belong in the MIR.*

Chapter 7 has the information to answer most questions about the MIR. For example, paragraph 704 tells us that *the originator of the MIR is the appointing authority and not the senior member of the AMB.* Other topics include deadlines for submission of reports, message precedence ("routine" if you please, not "priority"), the effects of "minimize" (MIRs are exempt), how to handle enclosures to the MIR and a description of the Flight Surgeon's Report.

Paragraphs 718 and 719 are short, but contain strong medicine. Paragraph 718 directs that each member of the AMB shall review the completed report prior to submission to the appointing authority. Individual board member comments on the report, generated in this review process, should remain appended to the report until reviewed by the appointing authority. This allows each member of the AMB an opportunity to express to the appointing authority any personal feelings concerning the investigation or the MIR itself.

Paragraph 719 provides direction for the appointing authority to review the investigation and MIR for adequacy. Should the appointing authority consider that either the investigation and/or the report are not adequate, the report shall be returned to the AMB and measures taken to ensure the adequate investigation and/or reporting of the mishap. Remember, this direction is for adequacy and *not* concurrence. If the appointing authority feels the report is *adequate,* he shall release the MIR. If the appointing authority does not concur with portions of the report, he should say it in the *endorsement* as described in Chapter 8 (and that is food for another article).

In summary, the appointing authority must be familiar with how to execute his responsibilities as to adequacy and the MIR. Despite sensitivities, the pressures of deadlines and conflicting priorities, the appointing authority's review for adequacy must remain a strong link in the mishap prevention chain. ◄

Maj. Forney is a naval flight officer with 2,000 hours in the F-4 and 500 hours in the F-14. He is a Safety School graduate, a former squadron aviation safety officer (ASO) and currently the director of standardization and safety (DSS) for Marine Corps Combat Readiness Training Group Ten (MCC RTG-10).

Fill 'Er Up?! During a recent southern deployment, two Marine A-4Es rendezvoused with their night tanker, orbiting at FL 220. The flight leader plugged on the port drogue, while his wingman stabilized behind the starboard drogue and began to close. However, the hose began to form a large sine wave and the second Skyhawk pilot retarded his throttle in order to back out of the drogue.

With the sine wave passing the A-4's canopy, the hose separated from the KC-130, and the A-4 was immediately sprayed with JP-5. The fuel was sucked into the engine and a powerful explosion ensued which blew the "greenhouse" door out of the intake, fodded the engine and severed several hydraulic lines.

Finally able to clear the tanker, the Marine aviator determined he still had control of the aircraft, even though the basket and hose were wrapped around his IFR probe and forward fuselage. His lead gave him a visual inspection, and finding nothing else wrong, the flight proceeded back to base for a precautionary approach. Lowering the landing gear, the pilot was presented with a Utility Hydraulic Light. However, he made a successful approach and landing.

And a Side Order of Cooked Winder, Please! Two A-7s launched on an overwater training flight, each plane carrying a Mk-58, Mk 76s, 20mm ammunition and one AIM-9H. Both pilots were fully qualified for the hop and briefed appropriately, including the Sidewinder switchology to be used during the ACM portion of the flight. After launch and in-flight refueling, the two A-7s performed combat spread maneuvering and missile tracking exercises, each pilot selecting Sidewinder stations and IR cool as appropriate.

The mishap pilot selected weapon station 8 and master arm, but failed to deselect station 4, where the Sidewinder was mounted. He released the Mk 58, but because the Sidewinder station had priority over other selected stations, the Sidewinder inadvertently fired, impacting the water approximately one mile ahead of the flight.

This is not the first of recent inadvertent firings of Sidewinders, involving both the A-7 and F-14 communities. Usually these incidents result from improper pilot switchology. Concentration on other aspects of the flight, leading to inattention, and failure to remember to deselect the Sidewinder station combined to set the stage for this mishap and loss of an expensive missile, with no training experience resulting from the expenditure. Yes, the pilot received a valuable lesson, and I'm sure he will never leave station 4 selected again. But we cannot afford one missile/aircrew to learn the lesson. They are used to shoot down aircraft, not to make holes in H_2O.

And if you're saying, "It couldn't happen to me," it probably will. — Ed.

Hazardous Cargo. The C-9 took off with 45 passengers and three cargo pallets. After liftoff, the loadmaster surveyed the cargo and discovered fluid leaking from the rear pallet. Fortunately, the inspection was made prior to turning off the No Smoking sign, as per NATOPS. The squadron was radioed as to the nature of the liquid and the reply was that the fluid was not hazardous.

The fluid had begun to spread toward the passengers, carrying with

AIR BREAKS

it a strong, irritating odor. Several of the passengers began to complain of discomfort, despite attempts to control the liquid with rags. The pilot initiated a return to base. Shortly thereafter, the flight attendant, while trying to wipe up the spill, fainted, along with one of the passengers.

An emergency was declared and oxygen masks deployed, while the aircraft made an emergency descent. Cabin pressure was dumped and some relief was obtained. The landing was otherwise uneventful and the passengers were transported to the naval medical clinic for examination.

Hazardous cargo has become a problem for the VR community. Squadrons are directly responsible for maintaining security of their pallets prior to loading. This incident had the makings of a major accident which could have involved the loss of 51 people and a valuable aircraft. The crew of Nalo 362 of VR-59, NAS Dallas, is to be commended for their prompt, effective action. — Ed.

Intruder Under Pressure. During a climb to 40,000 feet, the A-6E pilot noted the cabin pressure altimeter beginning to climb past the 8,000 foot mark instead of remaining constant until the aircraft had passed 23,000 feet MSL. When the A-6 reached 40,000 feet MSL, the cabin pressure altimeter had begun fluctuating from 18,000 to 26,000 feet.

The Intruder crew elected to descend and return to base. During the descent, the cockpit began overpressurizing and by 1,000 feet MSL, as the aircraft turned on final, the cabin pressure altimeter was indicating negative value, approximately 3,000 feet below sea level. The crew dumped cabin pressurization and landed without further incident.

Post-flight inspection revealed the cabin pressure regulator control handle safety-wired in the ground test position instead of the flight position. The aircraft had flown 6.6 hours after an engine change and prior to this incident.

Doing the Phantom Rag. The F-4 had boltered twice and the air boss gave the crew one more chance to get aboard before he bingoed them to the beach. The pilot flew an OK pass, but had a hook skip. The hook bounced off the deck and impacted the drag chute housing, which resulted in the chute deploying as the aircraft left the flight deck. The pilot immediately countered the increased drag with afterburners and began to set up for a flight to the divert field 74 nautical miles away. Attempts to jettison the cumbersome chute were useless, the hook handle being jammed in the down position.

Realizing the combination of the chute drag and rapidly dwindling fuel supply, the Phantom pilot used afterburners in an attempt to accelerate past the NATOPS limit of 215 knots hoping that the chute would either release or burn through. Although it did not release, the chute did shred sufficiently to allow the F-4 to accelerate and climb at military power.

A straight-in approach was flown at the divert field, where the aircraft engaged the arresting gear. The Phantom landed with 800 pounds of fuel remaining, about five minutes more flying time. Post-flight inspection revealed that a broken tail hook actuator had caused the hook skip and the resulting damage to the drag chute assembly.

Intruder Electrics. The A-6 launched from the ship on an afternoon sortie. The mission was to tow a TDU in support of a radar tracking exercise. Rendezvousing with another Intruder which was to serve as safety escort, the first A-6 streamed the TDU, stopping the cable at 24,090 feet. The brake was applied and the prop feathered, and the aircraft began to descend from 12,000 to 5,000 feet. Although clouds were observed in the flight path, the radar showed little or no precipitation present, and the crew continued descent.

Entering the clouds, the A-6 experienced St. Elmo's Fire covering the windscreen and IFR probe, the glow increasing in intensity until it disappeared with a loud "pop" indicating electrical discharge. This cycle was twice repeated, the third instance giving the greatest intensity and pop. The wingman, although maintaining parade formation, did not experience the same phenomenon.

The flight exited the cloud after approximately two minutes, and the wingman observed that the tow cable was missing, at a point immediately outside the pod. No other ill effects were suffered or observed.

Although protected by the Faraday shield effect, the B/N did experience a minor shock as he rested his hand on the control panel at the time of the "pops." The electric charge which had built up during the flight through the clouds apparently dissipated through and cut the streamed cable. The broken end of the cable showed blueing of the steel strand, one-quarter inch from the break, strongly indicating arcing between the aircraft and the cable. Check the article "Elmo, the Patron Saint of Night Tanker Crews," in the June 1983 issue of Approach. — Ed.

The Window

By Lt. Wallace J. Conway

THE Sikorsky H-3 Sea King was designed with a boat hull to provide it with emergency amphibious capabilities. It is this capability that has contributed to its aircrew survivability record for controlled ditching and inadvertant water entry. Aircrews who have found themselves *upright* after water touchdown have had success in performing water takeoffs, taxiing to shore or being salvaged by shipboard facilities. Those aircrews, however, who have found themselves *inverted* have in several cases experienced great difficulty in escaping the aircraft. Paramount among these difficulties has been the unsuccessful jettisoning of the pilots/co-pilots window by use of the emergency jettison handle.

During the black of night on 18 August 1983 I found myself inverted, underwater, in total darkness and unable to jettison my window

The jettison handle was easily located by feel and rotated upward, followed by a solid elbow applied to the window. But the window did not move. Back to the handle. I wiggled it. I made sure it was up. I used a little more elbow the next time. The window still did not budge. "Relax," I told myself, "you're uninjured." "You're going to be OK." I rotated the jettison handle harder and faster, and put my elbow and shoulder to the window. The window was not going to jettison! Then I realized that the sliding window was open! But could I fit through it with this horse pack of an LPA wrapped around me? I followed the window ledge to the window latch. I had it! I opened it past the last notch all the way to the stops.

I was running short of breath. I put my left hand on the lower window ledge and my right hand on the harness quick release. I pushed my head through the window and squeezed out, pushing and wiggling. Finally, I was free. I pulled the inflation toggles on my LPA and almost immediately found myself on the surface.

After the incident, I began hearing accounts from others who had had similar experiences using the emergency release handle. They were surprising in both number and in the methods of final escape. Alternate methods included using the opposite window, standing on the seat and launching through the overhead greenhouse, applying a forearm smash to the wind screen and ripping the window off the track. Many skeptics doubted the ability of most people to fit through the window the way I had. We obtained a window and began a little in-house testing. To our surprise every man we tried, whether wide, thin, short or tall, was able to fit through the window in full flight gear. Should the need ever arise, remember the window. It works!

A number of H-3 pilots have indeed demonstrated a strong will to live by squeezing through the small open cockpit windows. Fortunately, H-3 airframe change No. 395 has eliminated the need for this Houdini-like escape. (Unless the window frame is severely damaged on impact.) This change replaces the window frame pad washers on the pilot/co-pilot jettison windows, which should eliminate binding and jamming during an inverted emergency egress. — Ed.

Lt. Conway is an SH-3H pilot. He is currently an ASW instructor with HS-11.

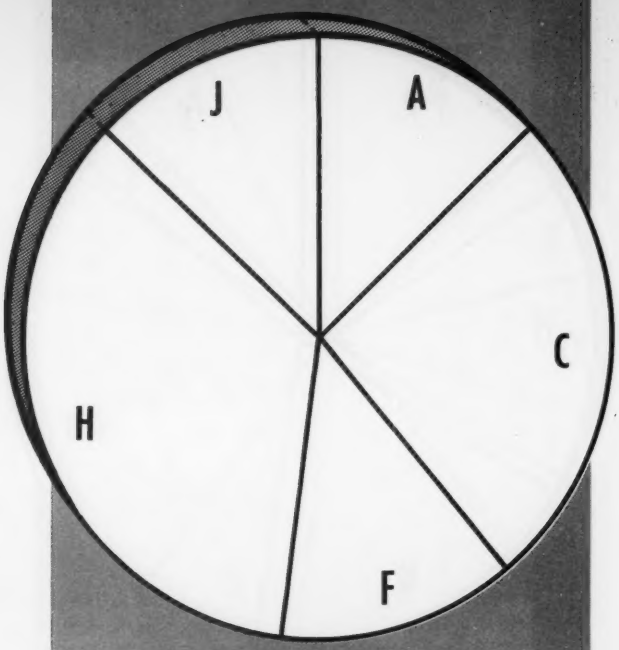
Helicopter Class A F/FRM Rates vs. Pilot Experience CY 77-83

By M.S. Borowsky, Ph.D.

Dr. Borowsky is the head of the Statistics and Mathematics Department at the Naval Aviation Center, Norfolk, Va. He has a doctorate of mathematics from Drexel University.

The pilot factor mishap rate in helicopters was not significantly related to time in model ($\alpha = .75$) in itself. The mishap rate was, however, significantly ($\alpha = .05$) associated with total hours. Interactions between the factors showed that the significance was due to a very high rate for pilots/co-pilots with less than 300 hours in model who also had between 450 and 1,000 total hours — and particularly if between 450 and 750 total hours. In addition, pilots/co-pilots with at least 2,000 total hours who also had at least 1,000 hours in model possessed a very low rate. This is in sharp contrast to earlier results which showed that the mishap potential significantly increased as time in model increased.

The accompanying charts show Class A F/FR pilot factor mishap rates as functions of lifetime hours in model and total hours. The rate for a specific experience level is the number of pilots/co-pilots at fault at that level per 100,000 flight hours accrued by *all* pilots/co-pilots at that experience level — not merely those in mishaps. Specific problem areas with the numbers of occurrences are provided for the specific experience levels. Major categories of problem areas are shown only if they are represented by at least three mishaps. Therefore, the pie charts do not have a uniform number of "slices."



HELICOPTER
Lifetime Hours in Model: 0-300
Total Hours: 0-450
13 Pilots/Co-pilots
Rate: 2.33

A. Violations of regulations/NATOPS — 3 (13.04%)
Violation of general air discipline — 1
Continued VFR under unfavorable weather — 1
Reckless operation — 1
Inadvertent violation — 1

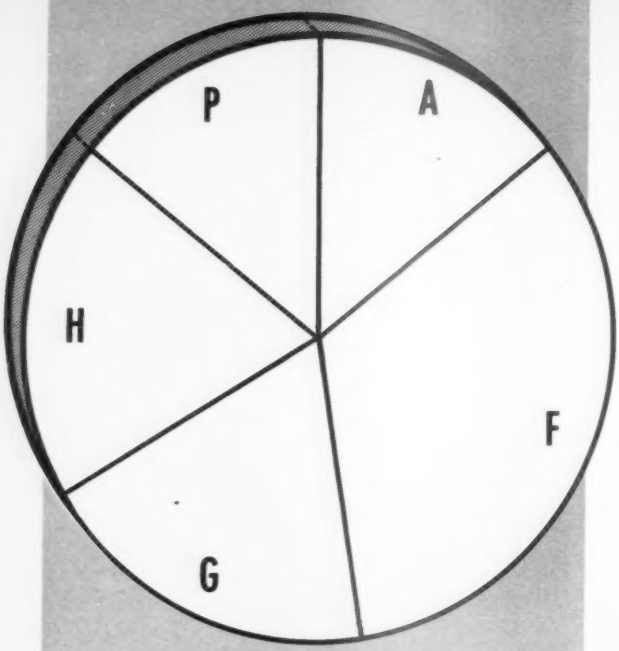
C. Improper use of flight controls in air — 6 (26.09%)
Misuse of collective pitch — 3
Excessive sink rate in approach — 1
Poor landing technique — 1
Poor takeoff technique — 1

F. Judgment errors — 3 (13.04%)
Misjudgment of closure rate — 1
General judgment error — 1
Failure to recognize dangerous situation — 1

H. Poor aircrew coordination — 8 (34.78%)
Failure to warn pilot of unsafe conditions — 3
Poor teamwork — 2
Failure to take over control in time — 4
Poor instructor technique/judgment — 2

J. Exceeded ability and/or experience — 3 (13.04%)
In mission/maneuver — 2
Insufficient refresher experience — 1

Note: Mishaps generally involve multiple factors. The sum of factors (A — S) may, therefore, exceed the total number of pilots/co-pilots. Likewise, the sum of the subfactors under a particular factor may exceed the specific factor total. The percentages are based on the sum of the factors (A — S), not the number of pilots/co-pilots.



HELICOPTER
Lifetime Hours in Model: 0-300
Total Hours: 451-750
12 Pilots/Co-pilots
Rate: 8.27

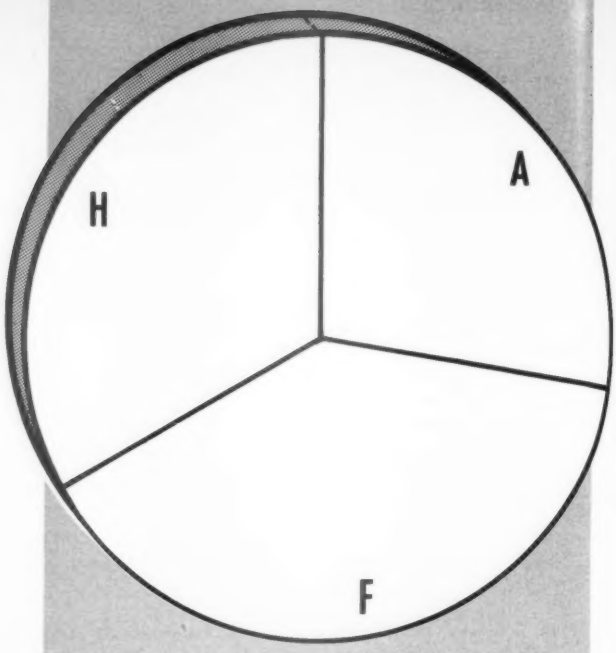
A. Violations of regulations/NATOPS — 3 (14.285%)
Violation of general air discipline — 2
Continued VFR under unfavorable weather — 1

F. Judgment errors — 7 (33.33%)
Misjudgment of distance/altitude/position — 3
General judgment errors — 2
Failure to recognize dangerous situation — 2
Inadequate evaluation of circumstances — 1

G. Inadequate flight preparation — 4 (19.05%)
Poor navigation planning — 1
Accepted aircraft with known discrepancies — 1
General planning errors — 2

H. Poor aircrew coordination — 4 (19.05%)
Poor teamwork — 2
Failure to follow instructions — 1
Inadequate supervision — 1

P. Improper use/inattention to fuel system — 3 (14.285%)
Ran fuel tank dry — 2
Fuel mismanagement — 2



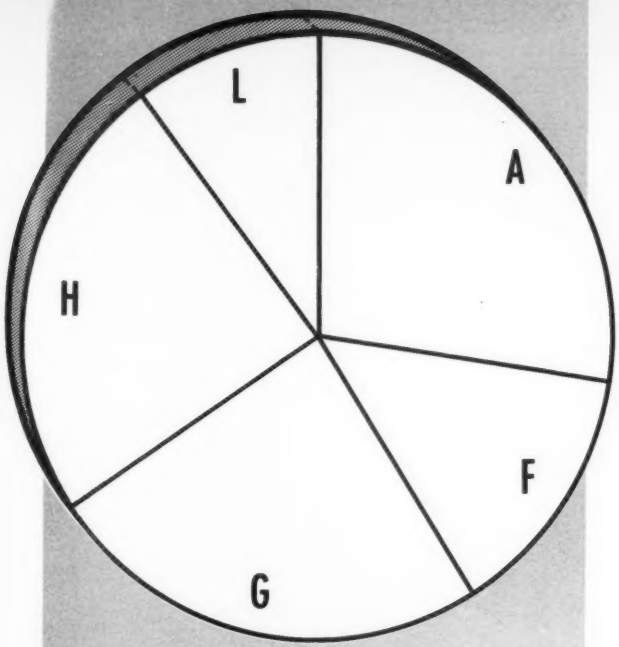
HELICOPTER
Lifetime Hours in Model: 0-300
Total Hours: 751+
13 Pilots/Co-pilots
Rate: 3.30

A. Violations of regulations/NATOPS — 5 (27.78%)
Violation of general air discipline — 2
Continued VFR under unfavorable weather — 1
Violation of specific orders/regulations (SOP) — 2
Intentional violation of NATOPS — 1

F. Judgment errors — 7 (38.89%)
Misjudgment of distance/altitude/position — 1
Altitude on target run — 1
Failure to recognize dangerous situation — 6

H. Poor aircrew coordination — 6 (33.33%)
Failure to see aircraft/object — 1
General coordination problem — 1
Failure to take over control in time — 3
Poor instructor technique/judgment — 1
Failure to brief other pilot on responsibilities prior to flight — 1
Inadequate supervision — 1

Graphics by Frank L. Smith



HELICOPTER
Lifetime Hours in Model: 301-500
18 Pilots/Co-pilots
Rate: 2.56

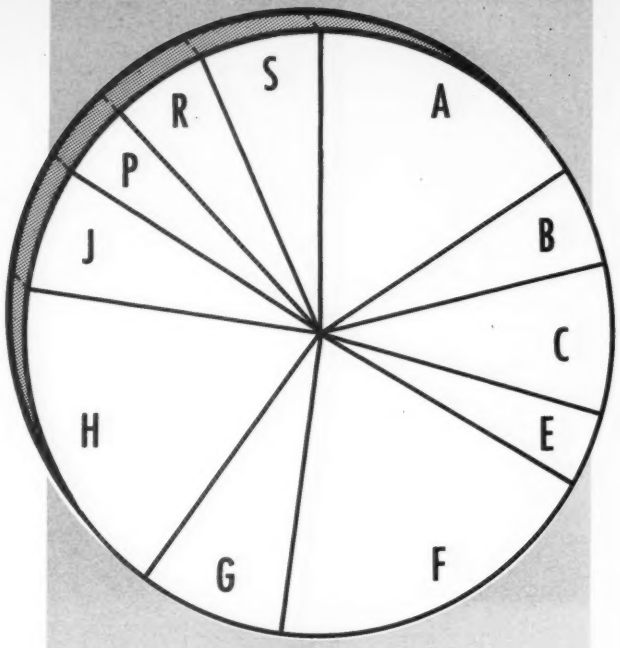
A. Violations of regulations/NATOPS — 8 (27.59%)
Violation of general air discipline — 4
Reckless operation — 1
Violations of SOP — 1
Intentional NATOPS violation — 1
Inadvertent NATOPS violation — 1

F. Judgment errors — 4 (13.79%)
General judgment errors — 1
Failure to recognize dangerous situation — 1
Inadequate evaluation of circumstances — 2

G. Inadequate flight preparation — 7 (24.14%)
Poor navigation planning — 2
Attempted takeoff without removal of tiedowns — 2
Overloading — 1
Weight and balance — 1
Accepted aircraft with known discrepancies — 1
Incomplete preflight due to haste/preoccupation — 1

H. Poor aircrew coordination — 7 (24.14%)
Misjudged distance/altitude/position — 1
Failure to see aircraft/object — 1
Failure to warn pilots of unsafe conditions — 2
Poor teamwork — 3

L. Inadequate lookout procadures — 3 (10.34%)
Lost sight of aircraft while in formation — 1
Failure to see object — 1
Attempted maneuver without adequate assistance — 1



HELICOPTER
Lifetime Hours in Model: 501-1000
38 Pilots/Co-pilots
Rate: 2.96

A. Violations of regulations/NATOPS — 12 (16.00%)
Violation of general air discipline — 1
Continued VFR under unfavorable weather — 2
Reckless operation — 2
Violation of SOP
Overconfidence in maneuver — 1
Intentional NATOPS violation — 2
Inadvertent NATOPS violation — 1

B. Physical/mental condition of pilot — 4 (5.33%)
Vertigo — 1
Disorientation — 2
Distraction — 1

C. Improper use of flight controls in air — 6 (8.00%)
Misuse of collective pitch — 4
Poor landing technique — 1
Improper autorotation technique — 1

E. Failure to maintain flying speed — 3 (4.00%)
Failure to maintain engine/rotor RPM — 3

F. Judgment errors — 14 (18.66%)
Misjudged closure rate — 1
Misjudged distance/altitude/position — 1
Altitude on target run — 2
General judgment errors — 7
Failure to recognize dangerous situation — 4
Inadequate evaluation of circumstances — 5

G. Inadequate flight preparation — 6 (8.00%)
Poor navigation planning — 2
Attempted takeoff without removal of tiedowns — 1
Accepted aircraft with known discrepancies — 2
Failure/incorrectly computed takeoff/landing requirements — 1

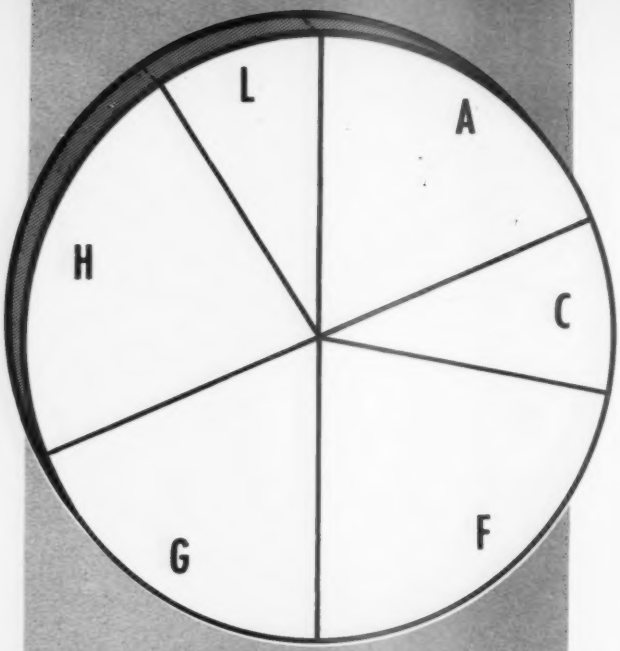
H. Poor aircrew coordination — 13 (17.33%)
Misjudgment of distance/altitude/position — 1
Failure to see aircraft/object — 2
Failure to warn pilot of unsafe conditions — 4
Failure to take control in time — 3
Poor instructor technique/judgment — 1
Inadequate supervision — 1
Poor teamwork — 2

J. Exceeded ability and/or experience — 5 (6.66%)
In mission/maneuver — 1
Insufficient refresher experience — 3
Emergency placed pilot beyond limits of ability — 1

P. Improper use/inattention to fuel system — 3 (4.00%)
Ran fuel tank dry — 2
Fuel mismanagement — 2

R. Failure to compensate for wind — 4 (5.33%)
Performed improperly — 1
Failure to neutralize crosswind correction — 2
Poor landing technique — 1

S. Improper instrument procedures — 5 (6.66%)
Improper/lack of primary flight instrument cross check — 4
Failure to advise controlling agency of conditions that adversely affect the conduct of flight — 1



HELICOPTER
Lifetime Hours in Model: 1000+
Total Hours: 1001-2000
19 Pilots/Co-pilots
Rate: 3.64

A. Violations of regulations/NATOPS — 6 (18.750%)
Violation of general air discipline — 1
Violation of SOP — 2
Intentional NATOPS violation — 3

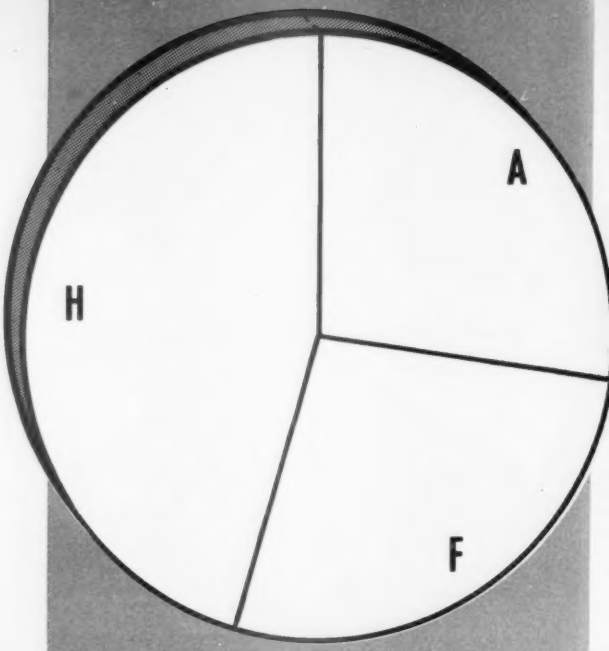
C. Improper use of flight controls in air — 3 (9.375%)
Excessive sink rate in approach — 1
Poor landing technique — 1
Improper autorotation technique — 1

F. Judgment errors — 7 (21.875%)
General judgment errors — 2
Failure to recognize dangerous situation — 2
Inadequate evaluation of circumstances — 1
Misjudgment of distance/altitude/position — 2

G. Inadequate flight preparation — 6 (18.750%)
Flight controls and airframe — 1
Poor navigation planning — 2
General planning failure — 1
Failed/incorrectly computed takeoff/landing requirements — 1
Incomplete preflight due to haste/preoccupation — 1

H. Poor aircrew coordination — 7 (21.875%)
Failure to warn pilot of unsafe conditions — 4
Failure to take control in time — 3
Poor instructor technique/judgment — 1

L. Inadequate lookout procedures — 3 (9.375%)
Failure to see object in time — 2
Miscellaneous — 1



HELICOPTER
Lifetime Hours in Model: 1000+
Total Hours: 2000+
9 Pilots/Co-pilots
Rate: 1.29

A. Violations of regulations/NATOPS — 3 (27.27%)
Continued VFR under unfavorable weather — 2
Violation of SOP — 1
Inadvertent NATOPS violation — 1

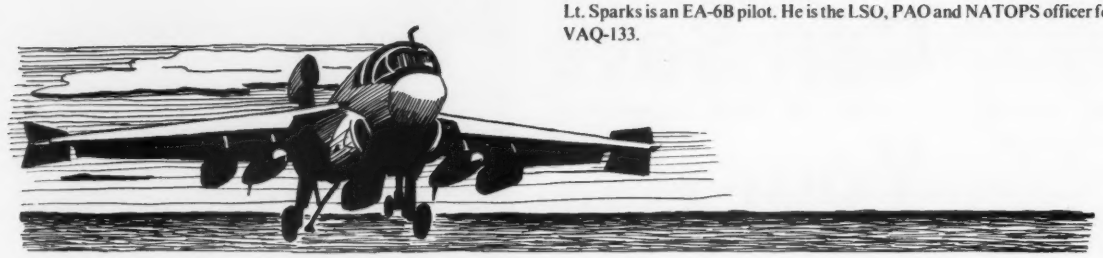
F. Judgment errors — 3 (27.27%)
Altitude during autorotation — 1
Misjudged distance/altitude/position — 1
Altitude on target run — 1
Failure to recognize dangerous situation — 2

H. Poor aircrew coordination — 5 (45.45%)
Failure to follow instructions — 1
Failure to warn pilot of unsafe conditions — 1
General problem — 1
Failure to take control in time — 1
Poor instructor technique/judgment — 1
Inadequate supervision — 1

You Should Believe That Voice

By Lt. Bart Sparks

Lt. Sparks is an EA-6B pilot. He is the LSO, PAO and NATOPS officer for VAQ-133.



MY crew and I briefed our late afternoon SSC* hop as usual. It would be a "routine" SSC hop aboard USS *Boat* in the middle of the Indian Ocean. We launched at 1530 for a two-hour and ten-minute cycle with a case three "pinky" recovery. We knew our fuel would be tight, so we set out to conserve as best we could.

After an hour and a half of SSC, we turned back toward the ship, using our DR plot to find it. The TACAN was not locking on, and the VDI** had failed. I turned the VDI off because it was a distractor. The TACAN finally locked onto the ship at 14 miles but with no azimuth. We requested and received approval to hold overhead the ship at 6,000 feet. Our fuel ladder indicated we would have approximately 1,500 pounds of fuel above max trap fuel by recovery time. No sweat!

We were given a push time from overhead holding at the scheduled recovery time. The final bearing had been given as 050° and the Marshal radial as 260°. We pushed on time and were immediately instructed, "Come left to the downwind heading of 230°, take angels 1.2." Passing 3,000 feet, we were told, "Come left to 070°, dirty up." The TACAN DME had been working for us the entire time, so we knew they had turned us inbound at 10 miles. At eight miles the controller said, "Come left to 010°, ship's in a turn."

The sun had just gone down, so we could see the ship in a right turn at our 2 o'clock. The controller instructed us to "fly the five-mile arc." Our fuel state at that point was 6.5 (600 pounds above max trap). A minute or two later, the ship gave us a right turn to 180°, final bearing 200°. At 2½ miles the ship locked onto us and asked for our needles. "Down and right" was my reply. The controller came back negative needles, mode III approach. By this time I had begun my descent to fly an "eyeball" approach. Using the theory "a peek is worth 1,000 scans," I attempted to get information from the ball and landing area lights. The lens and landing area lights were still off. At this point I was at 400 feet lined up as best as I could be based off the "look" from the back of the ship.

From the time I made the right turn inbound from five miles, my subconscious had been telling me to take it around for another approach. I also had quickly run through my mind that the VDI was dead and my fuel at this point was right at max trap. Neither was a big problem. I thought, "The whole Marshal stack is behind me, chasing the ship around its turn. I have the ship in front of me. If they would only turn on the lights, I could see how close I am. But they haven't waved me off yet. Surely the LSOs are watching. CATCC*** knows what's going on. *I can hack it!* When the lights come on, I'll be OK."

The controller then called "slightly above glide path, left of course, three quarters of a mile, call the ball." At that instant, the landing area lights came on at the same time the LSO called, "You're working left, bring it back to the right for your lineup." A second or two later, the lens came on. "Paddles, the datums are too bright," I said. Until they turned them down, I had no real ball definition, just a bright blur. Then they turned the datums down too much. But I had good ball definition so I committed myself to the pass. I was close enough to get it aboard. I made a big right for lineup at the same time I pulled power to work off a ball and a half high. In close, the lineup was squared away, with a centered ball, but I was settling like a "ton of bricks." The LSOs gave me a frantic "power, power, power" call to save my keister. If not for the outstanding power response of the engines, my crew and I would no longer be here.

A naval aviator is trained to gut it out. Once again I proved to myself that I can make the wrong decision trying to "hack it." A pilot should not continue an approach inside three quarters of a mile at night without sufficient information available to satisfactorily continue. Second, the LSOs probably should have waved me off with the situation that presented itself. A bad start like that could only get worse, especially at night.

In conclusion, if the little voice inside you says, "Take it around," do it! Don't let the situation and chain of events be the reason for your mishap. I was a lucky one. I'm still here to tell about it. ◄

*Surface Surveillance Coordination
**Vertical Display Indicator — the primary attitude reference
***Carrier Air Traffic Control Center

SA Can Save Your A.....

By Cdr. Rich Burns

THE A-7 driver was ingressing low over the hilly jungle terrain on a strike mission during a Cope Thunder exercise. Approaching the realistic airfield target located in a valley, he pulled his nose up aggressively then rolled back toward the runway pulling his nose back down in good clean swipes to defeat AAA acquisition. But now something went wrong — dead wrong. The videotape which captured the accident shows his nose is stuffed past the recovery point; it starts up just before impact, but too late and impact comes in a sickening ball of fire and aircraft disintegration.

Every once in a while in TACAIR, a concept or catchword comes along that says it all. Of the acronyms in vogue these days, SA — situational awareness — is a good one. The term covers a broad combination of headwork and airmanship items that will always keep the holder of the right stuff out of a jam. The expression has been around for a while, but a discussion of some key points is timely right now, especially for single-seaters.

Situational awareness is that level of alertness and knowledge that enables an airplane driver to assimilate a constant flow of information and sensory inputs so that he continually makes the right response at the right time and moves immediately to the next task ready to execute. Representative examples of environments demanding a high degree of SA are ACM* and BATs**.

The written record of events where aviators had a good measure of SA is sparse. Those instances are relegated primarily to the debrief or happy hour (ever notice how SA really goes up with each brewskie?).

But the record of events where SA was below the margin is *well* documented. In the extreme, it's called the mishap report. In the less severe form, we've seen it as FNAEBs, human factors boards or maybe even just a good butt-chewing. And then some of us have had our own private loss of SA that our buddies will never know about, but an occasional flash of memory still makes the palms sweaty and the mouth go dry.

The single-seat tactical aviator is uniquely susceptible to pay the highest penalty for loss of SA. In our community, momentary brain flatus. In addition to the previously mentioned individual who buried his nose, another A-7 pilot disappeared under an overcast on a night FLIR SSC*** mission. A third dialed in the wrong station on a TACAN approach and hit a hill several miles from the published track. And finally, one more guy hit the ground on a section low-level mission.

Right up to their last moment on earth, these pilots were feeling composed and comfortable, flying good airplanes and doing what they liked to do best. Seconds later man and machine were destroyed.

Single-seat fighter/attack is here to stay. So what is SA? How do you get it? And how can you keep it?

First, we need the basic ingredient — call it *innate skill*, right stuff or hand/eye coordination, it's what you walk through the door with. It's a given, and you either have it or you don't.

The next element is *environmental familiarity*, normally gained from experience. Low level, IFR, night, ACM — each represents a set of conditions with unique characteristics and problems.

Another big one is *aircraft systems* and *performance knowledge*. It's tough to keep the bubble in a dynamic mission like battle area tactics or ACM when you're three steps behind the jet. Same thing applies for push over from Marshal on your night Case III approach into the "black hole of Calcutta."

Then there is the *task at hand* — "What's the gouge?" All A-7 and F/A-18 missions are multitask. Pilot overload pegs quickly when one task is so unfamiliar that all others suffer at its expense. We usually call this "tunnel vision."

The final biggie in SA is the quality of *mental alertness* that is in the cockpit when the canopy comes down. You know the story, some days you have X-ray vision, telescopic

*Air combat maneuvering
**Battle area tactics
***Surface search coordination

brain and total clairvoyance. Seat-of-the-pants flying is so cosmic you can feel a gnat hit the wing on takeoff roll. Other days, taxiing on centerline at high noon is life's greatest challenge.

So how do we stack the odds, optimize combat smack on each mission and also survive? We need to look at the ingredients of SA once more:

Inherent skill. Sorry, not negotiable. But we can measure it to some degree and screen the pipeline at various crucial points to save folks from themselves.

Environment. There's no substitute for experience, but those in control need to make sure their youngsters walk before they run. State of the art simulation goes a long way here but it can't yield that edge that real experience provides. Points: (1) Don't overload in a new environment, (2) Keep 'em flying, COs, (3) Don't bore holes! Once wheels are in the well, make every minute count.

Systems/performance knowledge. This is pretty easy to accomplish and very easy to assess, at least in the initial phase, e.g. nuggett RP in the FRS. The measure of merit, though, is whether the basics gained in the FRS are a foundation for future development; or if the "basics" turn out to be the pinnacle of achievement. This last condition, we all agree, is UNSAT; but it happens all the time and is strictly dependent on command attitude.

Mission tasking. This skill likewise comes from preparation. It requires thorough pre-planning, the ability to conceptualize and the mental discipline to translate that conceptualization into action. Sounds easy, but this discipline fades fast after mid-cruise blues sets in. As a problem, you read about it all the time in this magazine as one of our biggest killers — complacency.

Saving the best for last, and all other things being equal, *mental alertness* can be the prime mover in situational awareness. Good whiskey and fast living are fun, but best wait 'til *after* the flying day and don't keep the party going into the next one. High living isn't the only culprit that plays; physical conditioning is just as important and can be a real bear to maintain, especially aboard ship. Then there is stress — self-imposed or environmental. Significant stress was implicated for at least two of the gents in paragraph 6 of this article. A stressed aviator is a liability to himself and to the outfit. The doc and the CO need to recognize the point where gyros are tumbling and drift limits are exceeded. In our normal competitive, stressful mode, the criteria for flight has to be the ability to mentally relegate all things not related to the mission into a compartment marked "N/A."

Lots of words here, and most are common sense. But you can save your tail if you remember one thing about situational awareness: It is, by definition, hard to know when you've lost SA — so if there is *any* doubt, level your wings, get the nose up and try it again some other time. ◄

Cdr. Burns' tactical aircraft experience began with a combat tour in A-4F aircraft with VA-212 aboard USS *Hancock* 1969-70. He later served as weapons delivery instructor with Light Attack Weapons School Pacific. During a department head tour with VA-113, he flew in Hunter and Jaguar aircraft during joint exercises. Prior to joining VA-22 as executive officer, Cdr. Burns attended the Air War College at Maxwell Air Force Base, Ala.

A Little Training Goes A Long Way

By Lcdr. M.V. Vazquez

MY entire class, years ago, left the RAG* without ever seeing a tanker. The reason? There weren't many windscreens available, so off we went to our respective fleet squadrons not thinking anything about it, knowing that someone would take care of the whole thing eventually. I checked aboard, turned in all the appropriate "stuff" and told the Ops O that the only qual I lacked from the RAG was tanking. "No problem . . . We'll take care of that in no time," he said. Now I could rest easy. The Ops O knew the problem and was going to solve it.

Two months after I had checked in, we set out for the Indian Ocean, not to return for three months. I still had not seen a tanker except on the flight deck when we sortied from Japan to fly blue water ops. About two weeks out the CO got wind of my training deficiency and took me on the next available hop to get my first taste of plugging.

Two hours later I crawled out of the cockpit with six plugs, a mashed up windscreen, a 3-inch hole in the fuselage, a "no grade" pass and a badly bruised ego. But the day tanking was finally done. The next hurdle was to do it at night. "Great, terrific, I'm excited about this one, I thought." I'm not really high on anybody's list right now, from the maintenance chief to the CAG LSO, and they want me to go and do it all over again . . . *at night!* I felt like saying, "Don't rush on my part, fellas," but I didn't press the issue. I made the rest of the at-sea period without ever needing to night plug. But I was always thinking, "What if I had to?" It wasn't long before I found out.

Our ship was off the coast very much involved with a fleet exercise. It's cold that time of year; the winds and sea states are generally high. It was my second flight of the day and, yes folks, it was *night time.* Off the front end, no problem. The deck was moving a bit with heavy seas and high winds, combined with a moonless night. At about a one plus 45 in the cycle I was back on the "ball" for a MOVLAS recovery. Fuel was not a major problem . . . on my first, second and third passes, that is.

On the fourth pass I made it very clear that I was at

*Replacement Air Group, now officially Fleet Replacement Squadron (FRS)

"bingo" fuel. That didn't seem to faze anyone but me. On my fifth pass I was: (a) not happy with my present station in life, and (b) below bingo.

"Wave off, foul deck."

Marvelous.

"Four-oh-three, your signal, hook up, gear up, TANK. Passing 2.5, go button 14."

"Get outta town, I thought. You guys can't do this to me!"

But I said, "Four-oh-three, roger. Switching 14."

Do I tell them I've never plugged at night, I asked myself. What good would it do? It won't make me feel any better, and for sure it's gonna get someone's hair on fire in Air Ops.

"Four-oh-three, your Texaco five-two-two, one o'clock, two miles, angels 3.5." This is really gonna be something.

"Tally." Did he say "522"? That's an A-6! I've only plugged A-7s a couple of times during the day, never mind an A-6 at night! Then, the master caution light lit . . . low fuel . . . 1,200 pounds remaining . . . A-7 bingo is 1.9 . . . 20 minutes of flight time left . . . flameout . . . ejection . . . explanations . . . then another thought hit me like a bolt. I had forgotten to wear my wet suit. What else was I going to give Grampaw Pettibone to write about?

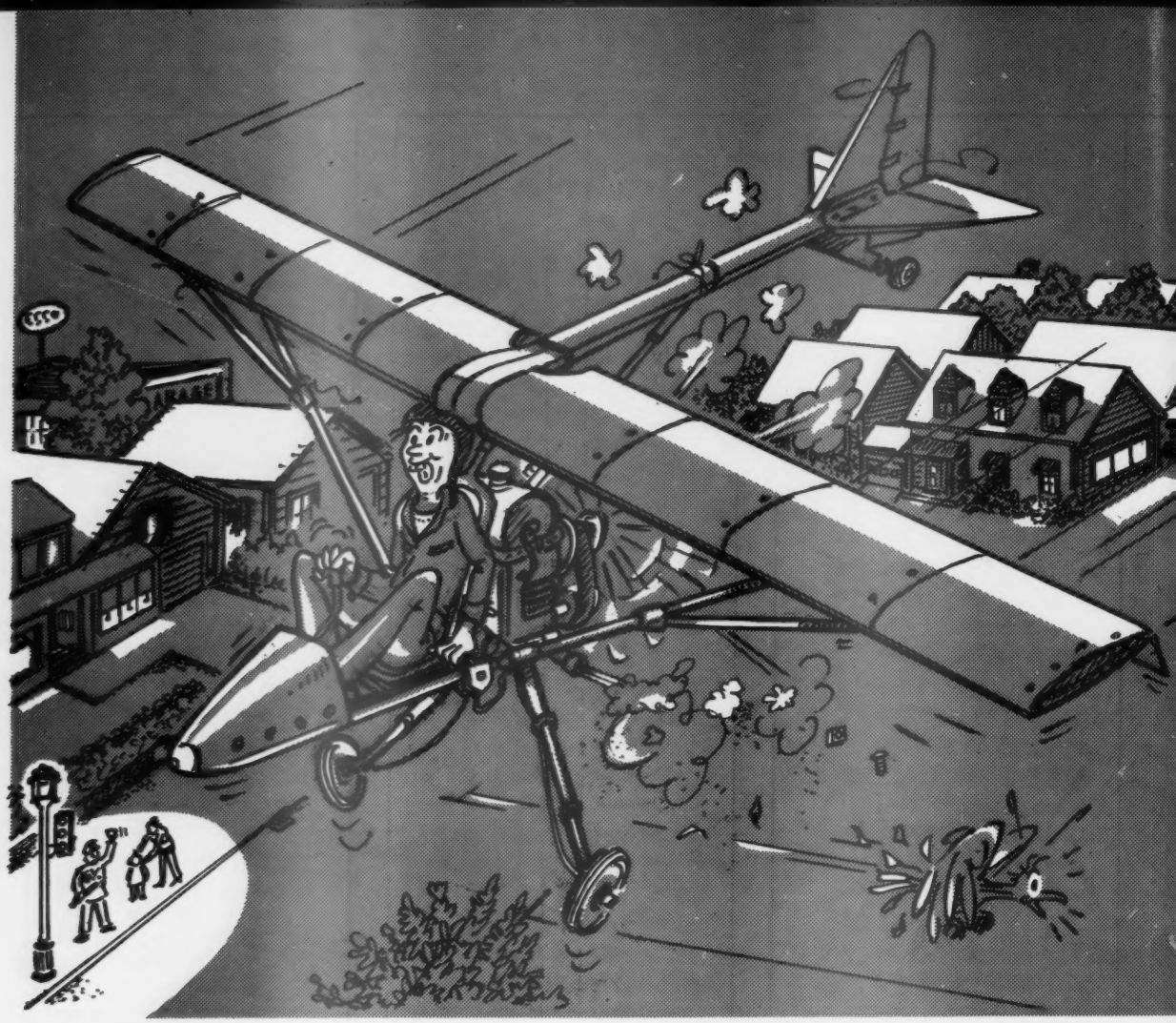
Joining now, easy, lotsa lights, probe out, easy now . . . "Cleared in 403" and slow, don't stare at the basket . . . "522, departure, report passing gas" . . . I'm in, I'm in . . . whoa, don't let it back out . . . what luck . . . "522, is that all?" . . . "You got 2.0, want more?" . . . Do I want more? Does Mickey love Minnie? . . ."That's affirmative" . . . "We'll give you two more" . . . four is better than two . . . "Departure, 403 is complete." Here I go on a vector to the final bearing . . . "403, your signal divert, pigeons . . ." Well, they're not going to put me back in the barrel. OK, let's recheck the approach plate, freqs, runways, etc., etc. No sweat, some confidence returning, the weather's clear . . . "Tower, NF403, 75 miles out, minimum fuel" . . . good tacan lock, on the nose, we're in there! "Hello tower, this is 403" . . . "403, Triple Sticks" . . . "Go ahead" . . . "Yeah, there's a Phantom off the end; we blew two tires and are attempting to clear at midfield. Suspect FOD on the first half of the runway and tower isn't talking to anyone" . . . "Roger" . . . Those guys must have misjudged the amount of gas they gave me . . . 70 miles to go, 1.6 remaining on the main needle . . . "Let me know when you clear the duty" . . . "Will do" . . . I should have about 3.6 . . . "403, we're clear, but tower is still not talking," . . . "Roger, I'm 25 miles out for a straight-in" . . . I've got the gas for a couple of go-arounds . . . "403 is five miles with the gear for landing" . . . "403, this is tower. The field is closed due to aircraft on runway" . . . Great, let's take this around . . . "403, Triple Sticks, if you have to land, go ahead. The runway is clear of aircraft but beware of FOD" . . . "Roger" . . . "Tower, 403 is landing next pass" . . . "403, tower, cleared to land."

Taxi clear, park at transient, shutdown with 1.0 remaining, get out, and notice one, count 'em ONE full drop-tank on wing station 3. One full drop-tank = 2,000 pounds of JP = flight time = distance, etc., etc. Was external transfer selected? NO. Did I ever look at the totalizer? No. Did anxiety about night tanking affect me? You bet!

It affected me two ways. One good and one bad. The good first. I found myself in a "no sierra" fuel critical situation having to perform a task that I had never trained for during night flights. All my energy and concentration was funneled to the chore. I had reverted to basics (fly airplane, plug tanker, get gas) which allowed me to engage the drogue without incident on my first attempt. Anxiety had put aside all the nonessential thinking until I had engaged the drogue. The bad effect of all this is that anxiety prevented me from coming out of "tunnel thinking" for the remainder of the evening. I "forgot" something that I would have known under less trying circumstances. I "forgot" in-flight refueling procedures for routing gas to the wing and fuselage tanks only. I "forgot" to check external fuel. I "forgot" to compare the totalizer to the "M" needle. Heck, I "forgot" I had a drop-tank! After the critical phase (refueling) was over and I was diverted, the anxiety blanket was lifted but not long enough for me to get out of the "tunnel." I might have figured it all out if the divert problems had not arisen, but I never did see what I was looking at. The totalizer and the "M" needle are on the same gauge. I certainly checked the needle enough times but I was oblivious to the totalizer. I remained in the basic mode (fly airplane, land airplane, don't break it) until I shut down in the parking spot. Would I have flamed out with all that useable fuel in the tank? I don't know, but it sure is a frightening thought. The fixin's for a "Jumpin'Jehosophat" were all there. This was a Class "A" that did not occur because, in spite of all the errors, an element of luck ran through the entire episode.

MORAL: Montezuma's Revenge will surely strike when you're down to six sheets of "TP" remaining. Stock up on "TP" (i.e. Training Points) before it becomes necessary to use it. DON'T BACK AWAY FROM ANY AND ALL CHANCES TO TRAIN. IF YOU DO, IT MIGHT BITE YOU IN THE "ALPHA." ◄

Lcdr. Vazquez is the safety officer for VA-81, an East Coast A-7 squadron.



ULTRALIGHTS:

Those Dangerous Flying Chairs

By Peter Mersky

MY first exposure to the burgeoning world of ultralights came on a late summer's evening when the sun had nearly set and darkness was fast approaching. Working at my desk, I became aware of a curious buzzing outside the house which rapidly became louder, and closer, and then disappeared. This cycle occurred twice more before I went outside to find out the cause. To my surprise, I saw a small skeleton of an aircraft flying over neighboring houses less than 200 feet above the ground. I was infuriated that a pilot would operate his craft in such a hazardous manner and immediately called the local police.

While waiting for the police to respond, I observed the ultralight — for that is what it turned out to be —

making several more takeoffs from the baseball field across the street, with people *on* the field, and the darkness fairly complete! The only light came from the field floodlights. It was incredible! How could someone do something so stupid. Finally, a trooper appeared at my door to discuss the incident. He told me he had stopped the pilot and had issued him a ticket. To my further consternation, the officer also obliquely indicated that the pilot was something less than sober, although he would not elaborate. All in all, a pretty scary evening.

I did some digging into ultralights the next day and found there was little or no regulation on these things regarding their operation, *or* — incredible as it sounded — the licensing or instruction of their pilots. How could this be?! I found it incomprehensible how such a situation could develop and flourish. But it did, and does.

Part 103.9 of the Federal Aviation Regulations (FARs) — the section directly pertaining to ultralights — declares:

— No person may operate any ultralight vehicle in a manner that creates a hazard to other persons or property. Paragraph 103.11 addresses hours of operation for ultralights: 30 minutes before official sunrise and 30 minutes after official sunset. Other areas of Part 103 also talk about the usual considerations: fuel, inspection, waivers and operation over congested areas. Sounds good. Then why is it with all this formalized control, many ultralight pilots — and they *are* pilots in that they operate aircraft — seem to disregard not only the established rules, but common sense? Certainly, the individual I encountered was on the borderline of safe operation. In the fleet, his flight would have been a "pinkie," so fast was dusk falling. And what about the "safe" operation of his craft over congested areas, with people all over the ground below him? And if he was inebriated, the greater his transgression and stupidity.

Normal powered flight is covered in the FARs, Paragraphs 135.244-247, which detail licensing experience and currency requirements. Total hours, date of last flight in type aircraft and medical considerations are all taken into account. No such coverage is given the ultralight community, even though interest in and operation of ultralights have skyrocketed in the last three years.

Perhaps the greatest area of conflict brought about by ultralights is the matter of coexisting with the rest of the aeronautical community, and nowhere is the question of sharing the skies more sharply defined than around airports. Near midair collisions (NMACs) involving powered aircraft — military and civilian — of all types — tactical jets, cargo/transport, helicopter, airliner and Cessna — and the haphazardly operated ultralight are beginning to appear in messages with frightening regularity. Ultralights wander into GCA patterns, indulge in aerobatic displays right in the middle of final approach paths and fly across other aircrafts' flight paths seemingly without care or consideration for the consequences.

As far as the U.S. Navy's involvement in the ultralight area, coexistence is shaky at best. A prime example is that of NAS Memphis. Memphis boasts 25,000 to 35,000 takeoffs and landings a year, involving many different types of military aircraft — B-52s to C-131s, helos, tactical jets and everything in between. A busy place. Charles Baker Airport is a civilian airfield situated approximately 5½ miles from the far end of Runway 22 at NQA. The operators — with the FAA's approval — have begun construction of an auxiliary strip for the sole operation of ultralights. Knowledgeable opposition by Capt. B.A. Spofford, Commanding Officer of NAS Memphis has been ignored by those concerned.

Despite examples of NMACs with ultralights by various aircraft in and out of Memphis, the FAA has allowed construction of the ultralight strip, which has been halted by lack of funds. It seems the overzealous airport operators underestimated the cost of such an undertaking. But, unless the construction order is rescinded, it is likely money will be found and the strip completed. The specter of ultralight pilots cavorting around close to an active military air base causes Capt. Spofford to comment, "Encouraging unlicensed people to operate from a field in close proximity to a naval air station with high amounts of tactical and transport traffic is courting disaster."

NAS Dallas is also wrestling with the ultralight problem. An ultralight "air park" has been proposed two miles from the GCA pattern to Dallas' Runway 35. As the commanding officer stated in a letter opposing the establishment of such an air park, "A concentration of ultralights . . . will increase the midair collision potential for high-speed military aircraft . . . Ultralights are not large enough to be quickly identified and successfully avoided by fast-moving military aircraft . . . Ultralights lack sufficient radar effectivess to provide a distinct target on FAA radars . . ."

One of the more insidious aspects of ultralights is the lack of construction standards, especially relating to kits which the home builder purchases, slaps together in his basement over the winter and happily drags to the nearest field in hopes of imitating the birds on a bright sunny day. Many crashes involving ultralights

can be directly traced to lack of proper building instructions or warnings. For instance, a fatal crash occurred because the ultralight's rudder and elevators *locked*, thereby forcing the craft into a downward spiral from which recovery was impossible. The surfaces locked because there was not enough clearance between a fuselage spar and the surfaces which the builder failed to properly seat when hammering the framework together.

Standards of flight instruction — if such instruction exists — also vary considerably. Some dealers require purchasers of their ultralights to take elementary instruction from properly rated pilots. That's a start, as far as it goes. Others require no such instruction and the neophite ultralight owner/pilot can just climb in, start the engine, taxi around a bit and lift off, sometimes with disasterous, or at least unexpected, results. Some industrious souls even hook themselves up to a friend's automobile and have themselves *towed* into the air! I have an image of flight training in France during World War I when the *ab initio* trainee spent hours taxiing a clipped-wing Bleriot along the ground to get the feel of his bird on the ground before attempting actual flight.

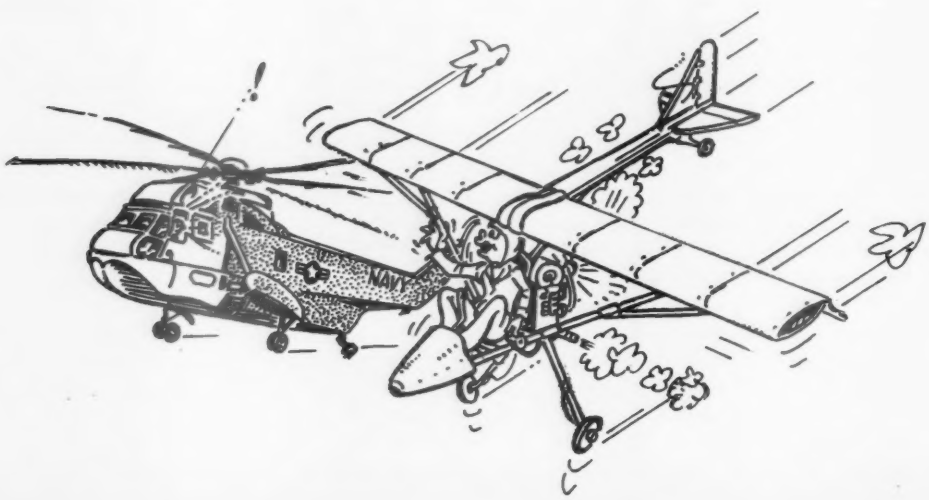
As pleasurable an experience as flying is, it can be dangerous, and most sane pilots would admit no one routinely goes looking for trouble. Yet, within the two-month period, July-August 1984, ultralights were involved in 13 serious accidents, some fatal. Look at the partial list of the circumstances and results.

An ultralight crashed on takeoff, the ignition wire worn through and grounded on the airframe; the pilot was seriously injured. Another pilot was killed when his ultralight's wings collapsed (not an uncommon occurrence). Yet another ultralight collided with a lamp post during takeoff. (A lamp post?!) The pilot was seriously injured. The wings of an ultralight folded and the aircraft spun in; the pilot was killed. An ultralight flew into power wires and crashed during descent; the pilot was seriously injured. The list goes on and on.

According to National Transportation Safety Board figures for the 20-month period of 1983 through August 1984, exactly one-half of the 166 reported mishaps involving ultralights resulted in at least one fatal injury. Eighty-three people dead! Seventy-three people seriously injured!

Now, with all this said, if you, as the intrepid naval aviator that you know you are, feel that you still want to enter the arena of ultralights, you might want to write the Aircraft Owners and Pilots Association for some handy literature on the subject. Some of the AOPA's pamphlets on ultralights are: *Ultralight Safety Tips, Sample Rules for Ultralight Operations at Airports, Guidelines for the Operation of Ultralight Aircraft at Existing Airports* and *Registering Your Ultralight*. All of these publications are free, although supplies of specific pamphlets may be limited. Write: AOPA, Air Safety Foundation, Ultralight Programs, 421 Aviation Way, Frederick, Maryland 21701. ◄

Peter Mersky is a staff writer for Approach.



BRAVO ZULU

Lt. Luke Ridenhour
VT-10

Lt. Luke Ridenhour, VT-10, while demonstrating a vertical recovery during a midshipman indoctrination flight, attempted to pull out of a dive at 17,000 feet and realized that he had lost all elevator control on his T-2. Quickly analyzing the situation, he retarded the throttles, extended the speed brakes and programmed full nose-up trim. The aircraft finally leveled off at 8,000 feet. Continuing to use elevator trim for primary pitch control, Ridenhour climbed back up to 14,000 feet and commenced low speed controllability checks. Although he had no fore-aft stick movement, he did have elevator trim available for limited pitch control and full aileron control.

Ridenhour chose a clean configuration approach at 150 KIAS because of the limited pitch control.

With a dwindling fuel supply, Ridenhour returned to NAS Pensacola and commenced his approach. Setting up for a straight-in approach at 150 KIAS, Ridenhour controlled his speed and rate of descent with the throttle, limiting his use of elevator trim to reduce the possibility of burning out the trim motor. He flew a flawless approach to an arrested landing.

Post-flight investigation revealed that an engine trunnion mount bolt had worked free, lodging in the elevator control section and freezing the control stick in the neutral elevator position.

It wasn't your routine Mediterranean Deployment. Our C-9 crew was involved in a high priority interservice mission carrying cargo and distinguished personnel throughout the Mediterranean theater during the Christmas/New Year's time frame.

"QNH*" Ninner-Ninner-Two

By Lcdr. Dennis R. Mills

Lcdr. Mills is a C-9 pilot and safety officer of VR-58, NAS Jacksonville, Fla.

We visited and revisited many interesting locations throughout the 10-day — 25,000 nm detachment. But alas, there is one day that this writer will not soon forget!

I still remember the day's flight itinerary. We departed NAS Sigonella early one morning with a large amount of cargo and personnel. The mission was to transport them to Ben Gurion, Israel, NAS Naples, then returning to Sigonella for an RON. All aspects of the days flight were routine until our arrival into NAS Naples.

The crew was very familiar with Naples and its peculiar arrival procedures, having flown into Naples many times before. The descent and low altitude handling was much the same as our previous approaches to the airport. When we were cleared below the transition level, ATC informed us to expect an ILS approach (due to the typically low visibility and ceilings characteristic for that time of year) and exclaimed that QNH was Nine-Nine-Two.

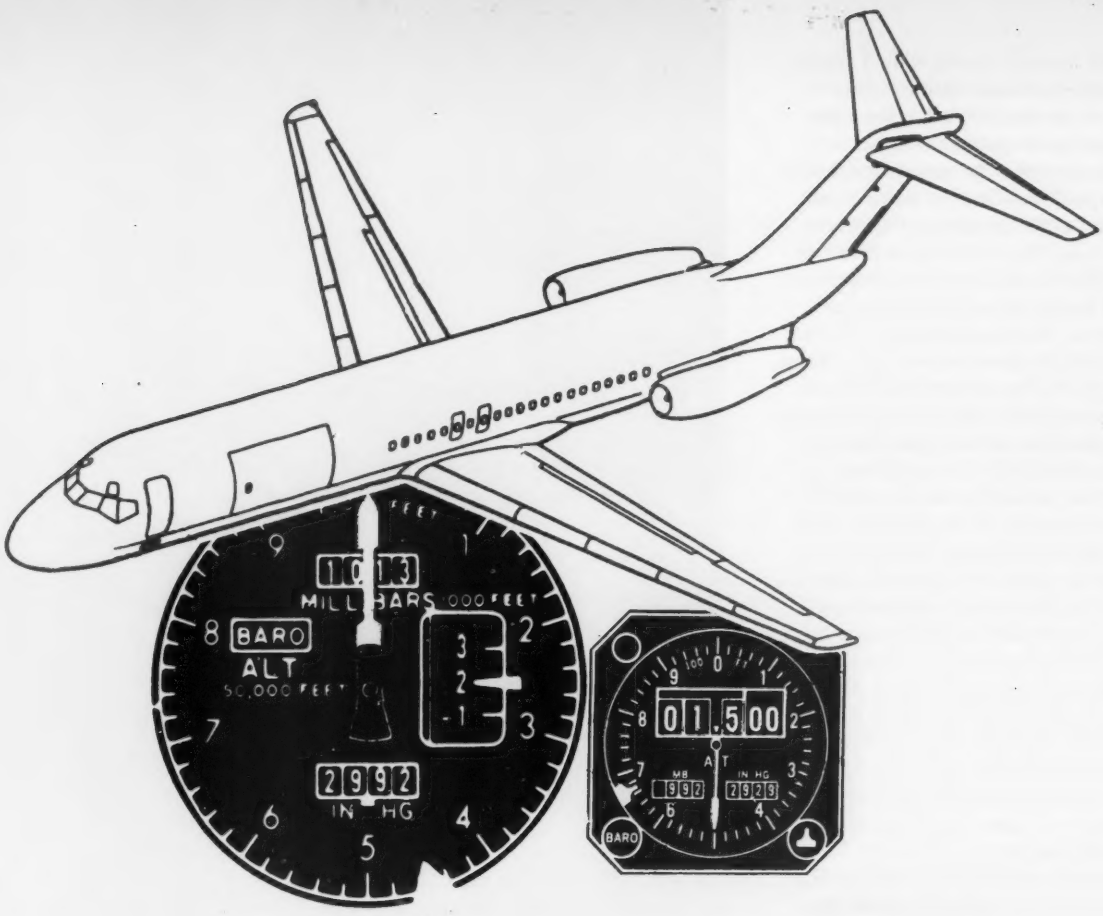
The crew completed the appropriate checklists and visually sighted the altimeter at 29.92. The crew had noticed no differences in handling with this arrival as opposed to the others.

After being vectored downwind on the ILS, the crew received its first indication that something was not quite right. The controller requested the crew to *"check their altitude."* A cockpit scan was completed and the altitude was read back as 2,000 feet. Aware that Napoli approach had altitude reporting capability, the crew dismissed the inquiry as a controller aberration, especially when the controller made no further query.

With the aircraft now in IMC conditions, the flight crew was becoming concerned at what appeared to be an extended vector towards the rising terrain east of the airport. However, at this point, the controller turned the aircraft to its final ILS intercept heading, while at the same time, *commanding the crew to descend no further.* In total disbelief the co-pilot and I looked at one another, rechecked and compared our flight instruments. With the aircraft showing level at 2,000 MSL, we now sensed that something was still wrong. We immediately asked the controller for the current altimeter and at what altitude his equipment indicated the aircraft to be. The controller responded immediately, QNH Nine-Nine-Two and that his equipment showed us at 1,500. Almost instinctively at this point, we inserted 992 millibars into the co-pilot's altimeter to see if this possibly was where the discrepancy was! Fortunately, at this point, as the altimeter was reset the error was discovered and the actual aircraft altitude displayed 1,450 feet MSL (a real difference of 550 feet). ATC was immediately advised of the misunderstanding and the crew was advised to continue the approach. A few moments later approaching 800 feet AGL, the aircraft broke into the clear and made *a very fortunate* uneventful landing.

After landing I went into base OPS in an attempt to discern how this misinterpretation manifested itself. How-

*Setting indicating true altimeter pressure above MSL.



ever, the language barrier and an unpredictable telephone system made it impossible to contact the appropriate air traffic controller.

The crew with the help of base operations attempted to reconstruct this incident. Apparently Napoli approach routinely gave U.S. military aircraft altimeter (QNH) settings in inches of mercury vice millibars, (as was the case with the first two arrivals). However, on this arrival such was not the case, and the crew was not attentative enough to discern the change in terminology.

Remember those "so-called insignificant rules" you were required to memorize back in your preflight days — "High to Low — Look out Below" — this is the classic example and how it can effect your flight. It's fortunate that the C-9 is so nicely instrumented, but it surely won't prevent you from becoming a landmark on Mount Vesuvius.

This is not a saga of a transport crew, it is a lesson that everyone can benefit from. Think of this scenario — you are on your first deployment, the ship is conducting its normal flight operations, you are not experienced in overseas flying, and an unknown divert field is assigned. You have had trouble getting aboard due to very poor weather conditions and you are directed to the divert field. The errant altimeter equivalent is unknowingly set into the flight instrument and the aircraft flies into the terrain making the TACAN approach.

Although not obvious to the reader, the flight crew was very experienced in the skill of international flight operations and the ICAO preference of millibars when referencing altimeters. However, there were several factors that contributed to this serious error: (1) characteristically when Napoli approach picked up a U.S. military aircraft they provided the pilot with the altimeter in inches of mercury or in many incidents both millibars and barometric altimeter settings; (2) the ATIS was out of service; (3) the barometric pressure was an unusually low millibar setting (992) and coincided with a standard altimeter setting often referenced in the U.S.; (4) the dash one weather forecast altimeter was not predicted to be as low as was actually encountered; (5) the terminal environment was very busy.

This was a frightful experience — one I think we can all benefit from. With more than 5,000 hours of pilot time and several thousand in the transport business, I can safely say it takes an incident like this to open your eyes and see how vulnerable one can be. It's fortunate for this crew that this was just a learning experience and not more. Also, I have a new measure of respect for international air traffic controllers — it's nice to know they too are watching. ◄

IT was still raining while I sipped my Coke outside Base Ops. My trusty A-4M glistened in the night under the bright lights of the transient line. The turnaround would be quick; nothing like a cold, rainy night to get the transient alert crew moving. This would be my third leg of flight, a large weather system over the entire central U.S. forcing a detour. We started out at NAS East as a flight of two, my wingman flying an A-7E. We were split up now, he diverting to a field with a dry runway because the arresting gear here was "not available." Getting in here was no easy task. The weather was solid goo from FL 350 to 1,000 feet AGL. There was lightning and St. Elmo's fire on the descent. Ground control lost me because of heavy rain on final approach course, but I got a good approach on the second try. Only the 8,000 foot runway was open, and I had to use it all to get the Skyhawk stopped. Now it was time to man up again.

The transient folks did a super job, and in no time, I was at the hold short ready to go. There was no doubt in my mind that I would beat my Corsair wingman to NAS Big Valley. On the runway, good run-up, and I was airborne into the rainy night. At 500 feet (AGL), I entered the overcast just as departure control directed "right turn, climb on course." It was then that the fun started. Passing flight level 200, solid IMC in a 30-degree angle of bank right hand turn, all the lights went out. All the lights, that is, except the "GEN" cowl light telling me the obvious: my generator had failed. Trying hard not to move the stick, I quickly pulled out my flashlight and found the ram air turbine (RAT) handle. With the canopy jettison handle so close to the RAT handle, I wanted to be sure I had the right one. I felt a little better when the red lights in the cockpit came back on after RAT deployment. In the few seconds that the lights were out, I was surprised to see I had gone from a climbing right-hand turn to a descending left-hand turn. I checked the pocket checklist, but it was no help. I simultaneously declared an emergency with Center and attempted to reset the generator. Center switched me to Approach Control who gave me a heading to fly and an altitude to descend to for an approach to the field I had just left.

I must have tried to reset the generator at least 20 times a minute for the remainder of the hop without success. I rolled out on heading, leveled off at assigned altitude, still solid IMC since takeoff, and began to take account of my situation. My TACAN DME was not working. I would be heavy upon landing with no spoilers, no speed brakes and no nose gear steering to help me. The weather wasn't the greatest. I was going to have my hands full trying to get the Skyhawk stopped. What did the approach plate have to offer? My assigned altitude is 3,000 feet below the emergency safe altitude. I hope Approach knows what they're doing tonight. Speaking of Approach, I haven't heard from them in a while. Better give them a holler. I keyed the mike once, and nothing. Again. Nothing. And again. And again. In my nearly 2,000 hours of flying mostly single-seat jets, I had never had so much as a hydraulic failure. And here I was, night, IMC, no

A Cold, Rainy December Night

By Lcdr. Tom Massicotte

Lcdr. Massicotte graduated from the U.S. Naval Academy. His first fleet tour with VA-93 was followed by attending and graduation from the Navy Test Pilot School. He is now serving a second tour with VA-93.

TACAN DME and operating on the RAT, NORDO.

My heart was pounding in my chest as I contemplated my predicament. Could I find the field in this weather? What was the terrain *really* like around here? Immediately, I climbed to the emergency safe altitude. I turned and put the TACAN needle on the wing and started arcing toward the final approach course. A thousand thoughts raced through my head. I must have scanned the needle a couple of hundred times in the first minute, and I swear, it wasn't moving. *It wasn't moving!*

Night, IFR, no generator, no DME, no radio, and now, no azimuth! My mind continued to race. Where would I go? How would I get there? Should I climb? How high? I knew the weather was better to the west. I began to become very depressed. I had gone beyond panic into depression.

But finally, slowly, the azimuth needle began to move. I felt a rush of optimism come over me. I studied the approach plate like I had never studied an approach plate before. I had not done any ADF work in years, but I had to give it my best shot. I turned in on final approach course. I didn't really know how far away I was, exactly, but I had a pretty good idea.

I timed two minutes inbound, then began a shallow descent to 6,000 feet (the TACAN approach had a 15-DME arc at 6,000 feet). I experienced station passage, then turned outbound and timed for three minutes. I turned inbound and put the flaps down. I had to hold the gear as TACAN is lost with gear down on the RAT. I timed inbound for one minute, then descended to TACAN mins, but I didn't break out.

I went back outbound and tried again. This time, I broke out at 500 feet AGL and spotted the runway. The red lights were flashing from all the crash trucks waiting for me. I lowered the gear, saw three down and locked and noted I was on-speed at 160 KIAS. I touched down on the end of the runway and began a slow deceleration. I started braking at 110 KIAS, and shortly thereafter, the left main tire blew.

The left brake pedal went all the way to the floor, and I had now set up a right drift that full rudder could not correct. The RAT dropped off the line and I shut the engine off, knowing I was going off the side of the runway. With all the rain, I just knew the Skyhawk was going to sink into the mud and flip over when it left the runway. I decided not to eject, but don't ask me why. With my hand on the canopy jettison handle, the Skyhawk left the runway at about 50 to 60 knots, 20 degrees off runway heading. The plane rumbled through the mud and came to rest without flipping over. I opened the canopy, pinned the seat and jumped out. I looked the airplane over and it was OK except for being covered with mud. I had been airborne for 31 minutes, but it had seemed like an eternity. I was physically and mentally drained, but felt enormous relief that my ordeal was over. I had made it.

I learned a lot that night:

You can never be overprepared to fly. Know as much as you can about your airplane. Take a look through your pocket checklist and think about your actions in emergency situations. Remember though, all the answers may not be there. Don't rush your planning between flights away from home plate.

I tended to ignore the field I had just landed at and concentrated on my next destination. While waiting for your turnaround, check on the condition of navaids, arresting gear, weather, terrain, etc., for your *departure* airfield. The arresting gear that was "not available" at this field turned out to be rigged and ready. Had I inquired at Base Ops before manning up, I would have known this. As it turned out, I was faster than maximum engaging speed when I crossed the short field gear and outside the maximum off-center engagement distance when I crossed the long field gear. So it all turned out for the better, but I guarantee you that I would have dropped my hook had I known there was arresting gear available.

I was told that approach vectored a TRACOM TA-4 to try to rendezvous on me. A well-intended act, I'm sure, but consider this: Even if it were a clear night, which it wasn't, could you join on an airplane with no external lights? I don't think I'd like to even try.

You don't have to be a downed aircrew in the water to benefit from having reflective tape on your helmet. The crash crew heard me land (no external lights, remember?) and raced down the runway after me. When they got to the end of the runway and didn't find me, they turned the crash trucks around and the headlights panned across my helmet's reflective tape, and they spotted my airplane off the runway.

As pilots, NFOs and aircrewmen of Navy planes, we have all been given a wealth of information on how to aviate, navigate and communicate. Brush up on some of the old TRACOM and FRS tricks. You'll never know when you might need them. ◄

LETTERS

Re: Upside-Down Hazard (Anymouse, Oct '84)

Lakehurst, N.J. — I am writing in response to the article entitled "Upside-Down Hazard," which appeared as an Anymouse in the October '84 issue of Approach. As I read the article, I must admit that I encountered great difficulty visualizing just how it would be possible for anyone to "wear an LPP-1 upside down." I had an even harder time understanding how the author's recommendation to stencil "top" and "bottom" on the vest would help the passenger "wear" it right side up.

Having served my operational tours in LAMPS, I have witnessed some of the most bizarre and hilarious attempts by passengers to properly wear the LPP-1, but I have never seen anyone "wear" one upside down. Being the quick-thinking rotorhead that I am, it finally occurred to my 90-knot brain that the terms "wear" used by the author and my definition of the term "wear" were at odds with one another.

Gentlemen, I would submit to you that there is only *one* way for a passenger to *wear* an LPP-1 on over-water flights in naval aircraft, and that is fully deployed over the passenger's head, having received a thorough briefing on inflation procedures and employment of signaling devices. At the altitudes that helicopters are restricted to when operating in and around the task force, it is inconceivable to me that a passenger would have the time, much less the presence of mind, to properly don his LPP-1 in the event of an immediate ditching. I firmly support a NATOPS/NWP-42 requirement for the aircraft commander to ensure that all passengers embarked in naval aircraft on over-water flights fully don their LPP-1. This would preclude the implementation of an upside-down solution to a right-side up problem.

Cdr. R.O. Baylis
Naval Air Engineering Center

Re: Prop Visibility (Anymouse, Sept '84)

Washington, D.C. — The recommendation to paint propeller tips with dayglo orange and white has been reviewed by NAVAIRSYSCOM technical personnel cognizant over the E-2C, C-2A, P-3C and H-3 aircraft, and their unanimous non-concurrence with the Anymouse recommendation necessitates its disapproval because:

1. Use of dayglo paint on the E-2C propeller tips in the 1968 time frame made no significant contribution to aviation safety.

2. Use of dayglo paint on the H-3 rotors demonstrated susceptibility to fading due to rain erosion.

3. Use of dayglo paint on the H-3 demonstrated a real danger to the crew from flicker vertigo.

4. Use of dayglo paint significantly enhances the aircraft visual signature and the aircraft carrier visual signature.

Naval aviation safety, when working around propeller-driven and rotor-driven aircraft, is best served through proper training and strict adherence to procedures.

John Sweeney
Deputy Program Manager
E-2/C-2/ATDS
Naval Air Systems Command

Re: "Ya Can't Fly Without Gouge" (Dec '84)

NAS Memphis — I was very impressed with the recent article on "gouge," by Lcdr. Andrew J. Peck. An article such as this has been a long time coming. I keep track of noteworthy gouge that I refer to from time to time. I find it very helpful.

I felt some of the formulas were more poignant or food for thought than real gouge, but nevertheless well worth mentioning.

The only worthwhile comment I have to make is the one mentioned concerning temperature conversion. While I've never run across this method before, it is quite good, but very difficult for an average aviator such as me to remember. One method I remember from basic jet ground school and never forgotten is when converting centigrade to Fahrenheit, simply double your figure and add 30. To reverse the conversion subtract 30 and halve your Fahrenheit temp value. While this method may not be as accurate, I think you will find in most cases it works best for temps below 100 degrees Fahrenheit.

Again, thanks a lot for the fine article.

Lt. R.A. Ladd
VR-60

Re: What Caused That Mishap? (Nov '84)

Patuxent River, Md. — It is commendable that Lcdr. Thomas L. Partin and Lt. Micheline Y. Eyraud have published this excellent article emphasizing the importance and value of flight data recorders (FDRs) to aircraft mishap investigations. I believe, however, they have sold the Navy short by crediting the Air Force with the first crash survival solid state flight data recorder (SSFDR) development. In fact, it was the Naval Air Test Center (NATC) that developed, tested and evaluated the first deployable crash survivable SSFDR in 1978-1979. This prototype contained two megabits of Army/Navy developed non-volatile block organized random access memory/metal nitride oxide semiconductor (BORAM/MNOS) packaged in the AN/ASH-20(V), RO-370 magnetic tape recorder envelope. This system recorded approximately 60 aircraft parameters for 30 minutes and digitized aircrew audio for five minutes. This system was subjected to ground and flight (P-3B) testing in December 1979. See NATC Report of Test Results SY-8R-83 of 10 August 1983.

A second six-megabit BORAM/MNOS deployable SSFDR was developed in 1980-1982. This system recorded approximately 60 aircraft parameters for 30 minutes and digitized audio for 15 minutes and was successfully subjected to MIL-E-5400 Class 2 qualification testing and extended TSO-C51a survivability testing. The NATC final report is in progress.

A third six-megabit electrically erasable programmable read only memory/silicon nitride oxide semiconductor (EEPROM/SNOS) is currently being developed under a joint U.S. Navy/Canadian Forces program. A prototype of this system was successfully flight and survivability tested on the B-720 aircraft crashed by NASA/FAA on 1 December 1984 at Edwards Air Force Base, Calif.

All of these Navy DT & E programs demonstrated non-volatile solid state memory feasibility, performance and survivability for military aircraft mishap recording and investigation prior to the Air Force F-16 non-deployable SSFDR program. The Navy is also currently developing a deployable EEPROM SSFDR for the F/A-18 aircraft.

Dan M. Watters
Naval Air Test Center (SY7OD)

Approach welcomes letters from its readers. All letters should be signed though names will be withheld on request. Address: Approach Editor, Naval Safety Center, NAS Norfolk, Va. 23511-5796. Views expressed are those of the writers and do not imply endorsement by the Naval Safety Center.

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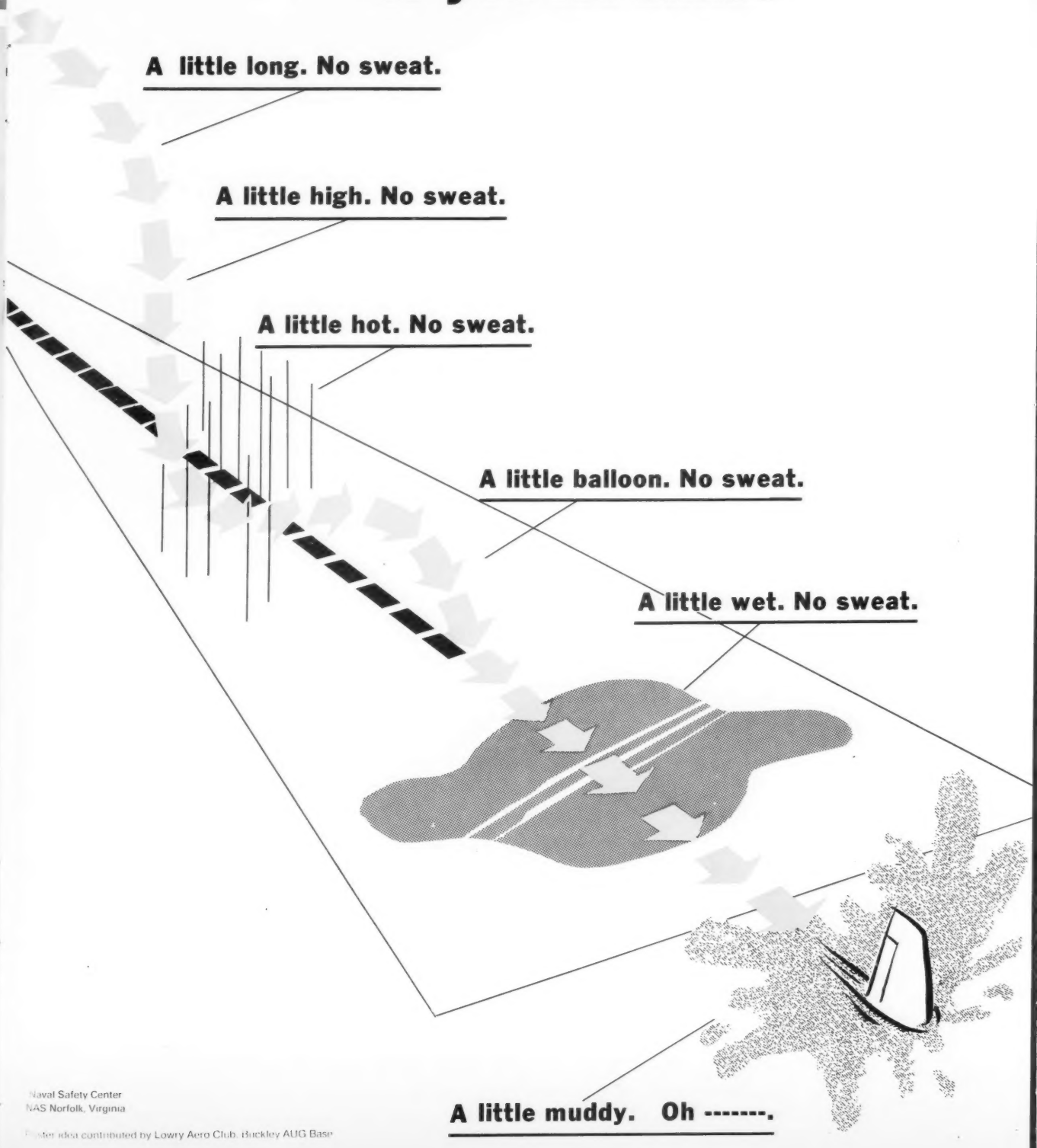
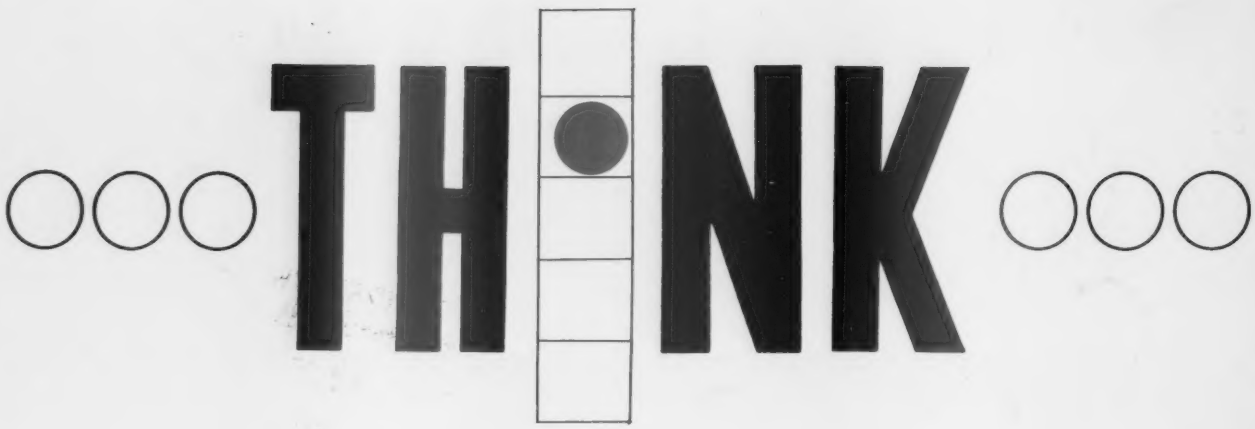
It all adds up:

How many little things do you let slide?


A little long. No sweat.
A little high. No sweat.
A little hot. No sweat.
A little balloon. No sweat.
A little wet. No sweat.
A little muddy. Oh -------.

Naval Safety Center
NAS Norfolk, Virginia

Poster idea contributed by Lowry Aero Club, Buckley AUG Base



Naval Safety Center
NAS Norfolk, Virginia

Poster idea contributed by VA-46.